EFFECTIVENESS OF SNAKE AND LADDER GAME ON KNOWLEDGE AND KNOWLEDGE ON PRACTICE REGARDING PREVENTION OF WORM INFESTATIONS AMONG PRIMARY SCHOOL CHILDREN AT SELECTED CORPORATION SCHOOLS, COIMBATORE.

BY

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A DISSERTATION SUBMITTED TO
THE TAMILNADU DR. M.G.R MEDICAL UNIVERSITY, CHENNAI,
IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE
DEGREE OF MASTER OF SCIENCE IN NURSING

BRANCH II- CHILD HEALTH NURSING

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CERTIFICATE

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ABSTRACT

A true experimental study was conducted to evaluate the Effectiveness of snake and ladder game on knowledge and knowledge on practice regarding prevention of worm infestations. Total 120 primary school children (9-11 years) at Rathinapuri and Sidhapudur corporation schools, Coimbatore was selected by using disproportionate stratified random sampling technique. A Self administered structured questionnaire and check list were used to collect data based on the study objectives.

Among experimental group, in pre test majority of the samples had inadequate knowledge and in post test most of them had adequate knowledge whereas in pre test majority of the samples had moderately adequate knowledge on practice and in post test almost all of them had adequate knowledge on practice. The calculated paired't' test value of knowledge (t=19.84) and knowledge on practice (t= 20.46) was showed highly significant difference at $p \leq 0.01$ in experimental group. The calculated independent 't' test value of knowledge (t=16.51) and knowledge on practice (t=14.38) showed highly significant difference at $p \leq 0.01$ between experimental and control group ,which revealed that snake and ladder game was effective in improving the level of Knowledge and knowledge on practice regarding prevention of worm infestations among samples. The calculated Karl Pearson 'r' value (r=0.21) of knowledge and knowledge on practice regarding prevention of worm infestation showed positive correlation. Among experimental group, in post test significant association found between level of knowledge and occupational status of father. In pre test significant association found between level of knowledge on practice and occupational status of father, total number of children in the family and previous exposure to worm infestation except for the other demographic variables.

Snake and ladder game is an easily adaptable form of game that can be practiced at any place and any time, with budget entertainment .It is widely practiced not just for recreation, but also to improve knowledge in various aspects.

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CHAPTER I

INTRODUCTION

"What we want is to see the child in pursuit of knowledge and not knowledge in pursuit of the child".

~George Bernard Shaw.

A child is precious not only to the parents, but also to the family, community and nation and to the world at large. In fact child is a future citizen of world and thus it becomes the responsibility of the wide population of the whole universe to look after the interest of the children all over. Children are assets of our country.

Children are the gift to this world and it is the responsibility of the society to nurture and care for them. School-age years are crucial for establishing positive self-esteem and self-concept and it is during this time the child learns how to master skills and relate to others. Childhood years are significant for intellectual growth and personality development. Although the school-age years are one of the healthiest phases of life. Many studies have shown that children are affected with many diseases due to lack of knowledge.

2011 census reported that India is the second most populous country in the world, with over 1.21 billion people. The children age 0-15 years constitutes about 31.1% with the strength of 190,075,426 male children and 172,799,553 female children. In that 15% consist of school children.

School children are exposed to various epidemiological factors in the environment which influence their present and future state of health. Sufferings from minor ailments are the most frequent episode in childhood experiences. A productive and energetic population cannot grow from unhealthy children who are chronically affected by repeated minor ailments. The common minor ailment among school children includes fever, cough, common cold, dental caries, sore throat, conjunctivitis, diarrhoea, vomiting and worm infestations etc.

Dr. Pervez Akbar Khan, MBBS, FCPS, (2012) states that worms are parasites, with man as a host. Intestinal parasites are worms, soft bodied organisms that can infest human and animals. A parasitic worm fall into several different classes and includes hook worms, round worms, tapeworms, whipworms and pinworms. The parasitic infestations are acquired by ingestion, inhalation or penetration of the skin by the infective worms. In India, favorable circumstances exist for high morbidity due to rapid industrialization. Due to open air defecation and added to it the menace of flies and other insects, poor personal cleanliness, habits of barefoot walking and poor disposal system of human excreta, favors worm infestations in children.

WHO (2015, May) reported that more than 1.5 billion people or 24% of the world's population are infected with soil-transmitted helminthic infestations worldwide. Infections are widely distributed in tropical and subtropical areas, with the greatest numbers occurring in sub-Saharan Africa, the America, China and East Asia.

Over 270 million preschool-age children and over 600 million school-age children live in areas where these parasites are intensively transmitted and are in need of treatment and preventive interventions.

UNICEF (2002) estimated that globally more than 3.5 billion people are infected with intestinal worms. Of them, 1.47 billion have infected with roundworm, 1.3 billion are infected with hookworm and 1.05 billion with whipworm. The highest rates of roundworm, hookworm and whipworm infections are often in children between age 5 and 15. It is estimated that about 400 million school-age children are infected with these three types of worms.

Worm infestations are one of the major health problems confronting millions of school-age children. These parasites consume nutrients from the children they infect, thus aggravating malnutrition and retarding physical development. They also destroy the tissues and organs in which they live. They cause abdominal pain, diarrhoea, intestinal obstruction, anaemia, ulcers and

various other health problems. These ailments can impair learning and slow cognitive development, ultimately resulting in poor school performances of a child. It is not uncommon for heavy or long-term infection to result in death, if treatment is not given in time. It is especially important to note that the stunting of children's growth due to worm infections is not easily recognized because it occurs almost imperceptibly over time. Thus, the full impact of intestinal infections is often greatly under-reported or overlooked. Intestinal worm infections destroy the well being and learning potential of millions of children in many developing countries.

Piyushgupta (2004) states that up to 1/4th of the total world's population is infected by round worms. They lives in the small intestine, lays huge numbers of eggs that were excreted in the stools. Open air defecation cause contamination of soil. Vegetables cultivated in contaminated soil, when these are consumed uncooked such as salads causes worm infestations.

J.Vishwanathan (1989) mention that $6/7^{th}$ of the total incidence of helminthiasis is perhaps due to ineffective disposal of human excreta and one third of the population harbours with various worm infestations.

WHO (2008) reported that 1100 million people were defecating in the open field resulting in high levels of environmental contamination and exposure to the risk of worm infestations.

The Government of India with help of partners like UNICEF is looking at the challenge of Open Defecation very seriously. The government has a target to make India "Open Defecation Free" by 2019. In UNICEF India is a key partner in its flagship programme to achieve this target through the Swatch Bharat Mission.

Hook Worm has been estimated that approximately 2 billion individuals were infested in India with hookworm alone. They enter into the body through the skin, usually by bare feet. It also developed by foods like beet root, carrots when consumed without washing. The larvae enter in to the small intestine, where they may alive for many years and taking nutrients through intestinal walls. Hookworm

infestation may lead to chronic blood loss and reduction of iron storage in body cause Iron deficiency anaemia. This may lead to retarded development of infant, birth of underweight babies if the pregnant women are infected. The eggs which are expelled in stool, cycle re-continues if the soil gets contaminated.

Prof.K.N. Agarwal (2010) states that hook worm is one of the world's chief causes of Iron deficiency anaemia and is widely prevalent in India. NecatorAmericanaus is predominant in South India and Ancylostoma duodenal is predominant in North India.

Pin worms are very small in size, about 2-4mm, mostly seen in clusters and white in colour. Pin worm infestations are characterised by the extreme itching in anal area. Pin worms are generally live in lower intestinal tract of peoples. The female worms lay eggs in the anal area during night and cause severe itching. The consequential rubbing transfers the eggs to the fingers. Children eat foodstuff without cleaning and washing their hands, the eggs hatch in the intestines and thus the cycle continues.

Trichuriasis is an infestation of the large intestine caused by the human whipworm (Trichuristrichiura). Trichuriasis is part of a family of parasites known as the soil-transmitted helminthes. Whipworms thrive in warm, humid tropical climates and infect 800 million people worldwide.

Trichuriasis is transmitted through accidental ingestion of contaminated soil or unwashed vegetables fertilized with human faeces. Children are at high risk for whipworm, because they often play outside in the dirt or soil and put their hands in their mouths without washing them. Prolonged exposure to whipworm can cause serious health consequences including malnutrition, anaemia, and physical growth retardation in children.

Taeniasis is an intestinal infestation caused by 2 species of tapeworms. Such as Taenia solium (pork tapeworm) and Taenia saginata (beef tapeworm).The Taenia tapeworm infestations are caused by consumption of pork and beef which has consumed raw or undercooked , ingesting contaminated food or water and poor hygiene .

Tapeworm larvae which are called cysticerci develop in the muscles, skin, eyes and the central nervous system. When cysts develop in the brain, neuro cysticercosis may result. Symptoms include epilepsy, severe headache and blindness, and can be fatal. Neurocysticercosis is the most frequent preventable cause of epilepsy worldwide.

Taeniasis due to Taenia solium or Taenia saginata is usually characterized by mild and non-specific symptoms. Abdominal pain, nausea, diarrhoea or constipation may arise 6–8 weeks after ingestion of the cysticerci when the tapeworms become fully developed.

WHO (2012) recommends periodic medicinal treatment (deworming) without previous individual diagnosis to all at-risk people living in endemic areas. Treatment should be given once a year when the prevalence of soil-transmitted helminthic infestations in the community is over 20%, and twice a year when the prevalence of soil-transmitted helminthic infections in the community is over 50%. This intervention reduces morbidity by reducing the worm burden. In addition health and hygiene education reduces transmission and re infection by encouraging healthy behaviours and provision of adequate sanitation is also important but not always possible in resource-poor settings.

Periodic deworming can be easily integrated with child health days or supplementation programmes for preschool children, or integrated with school health programmes. Schools provide a particularly good entry point for deworming activities, as they allow the easy provision of the health and hygiene education component, such as promotion of hand washing and improved sanitation.

WHO(2013) recommends periodic administration of albendazole (ALB) 400 mg or mebendazole (MBZ) 500 mg for control of soil transmitted helminthus. The global target is to eliminate morbidity due to soil transmitted helminthus in children by 2020.In 2013, over 368 million schoolchildren were treated with antihelminthic medicines in endemic countries, corresponding to 42% of all children at risk.

According to **O.P.Ghai (2007)**, the burden of disease due to these intestinal parasites is an estimated 22.1 million disability-adjusted life-years (DALYs) lost for hookworm, 10.5 million for Ascariasis; and 6.4 million for Trichuris. Approximately 10,500 deaths each year are due to complications of Ascariasis and 65,000 deaths per year are due to anaemia caused by hookworm infection.

Preventive measures of worm infestations includes practicing good personal hygiene, hand washing before eating, after toileting, changing diapers and handling pets, cut short the finger nails, wash the raw vegetables and fruits before consuming, avoid eating raw or uncooked meats, pure drinking water, environmental sanitation and avoid walking with barefoot while playing in warm and moist soil and proper disposal of human excreta.

Games are an innovative and challenging educational method. They have long been used as a teaching strategy in both child and adult education. They have also been used as a teaching strategy in medical education, predominantly to review and reinforce lecture material for graduate medical students. One such game is snake and ladder game. It is well known that games can incorporate concepts and principles of adult learning, including promoting self-learning and participation. By involving repetition and allowing important points to be reiterated, games appear to increase retention and application. Games encourage interaction among learners, increase learners levels of motivation, and enhance the opportunity to learn from others. Unlike many other educational formats, game-based learning can bring fun and enjoyment to the learning experience and might encourage greater participation in group learning activities, with the potential to

engage learners emotions, as well as their intellects, which helping to develop their visual alertness to increasing their attention span and assisting with memory strategies and reasoning.

The origins of Snakes and Ladders are reported to date back to India in the 2nd century BC. It was known by the name Mokshapatamu and was originally used by religious leaders to teach children about the difference between good and evil - climbing up the ladders representing good, and sliding down the snakes representing evil.

NEED FOR THE STUDY

Worm infestation is a leading cause of childhood mortality in developing countries of tropics and subtropics. In India 22 stations are known to be endemic for worm infestation and 553 million people are at risk of infection with 27 million parasite carrier and 21 million with filariasis. India is a largest country with various forms of diversities.

India has one of the largest numbers of school going children, especially in rural areas. There are about 6.3lakh rural schools both primary and upper primary with 8 crore school going children.75% of the children in the age group of 6-14 are attending schools in rural areas. Out of these schools, only 44% have water supply facilities, 19%have urinals and 4% have lavatory facilities. Under these conditions, schools and community environment become unsafe places, where diseases are transmitted, one of the major problems faced by the hundreds of thousands school age children are infections, primarily from contaminated water and poor sanitation and caused by variety of pathogen and parasites.

The **WHO (2012)** has estimated that approximately 1.4 billion people world wide is infected with at least one of the following helminthes such as round worm, whip worm, or hook worm.

WHO (2012) estimates the infection of round worm (Ascaris lumbricoides), whipworm (TrichurisTrichiura) and hookworms (Ancylostoma duodenal and Necator americanus) associated with morbidity shows that approximately 250 million, 46 million and 151 million people are affected respectively. About half the population in South India and 50 percent of school children in tribal areas of Central India is infected with Ascaris lumbricoides, Trichuris trichiura and hookworm. The overall prevalence of helminthes infestation in school age children in India is about 50 percent in urban and 68 percent in rural areas. Helminthic infections are more prevalent among school children aged 5-14 years. They constitute 12 percent of total disease burden in children.

In India children are more susceptible for so many health problems. Worm infestation not only affects the nutritional status, physical growth and development but also affect the intellectual development which may lead to mental retardation. Children from six months onwards suffer from worm infestation based on the food practices and low socio- economic status. 40% to 50% of children may harbor the round worms some times or the other.

WHO (2015) observed every year 1,400 million children worldwide are infected with worm infestation. Most of the children are affected with one kind of helmenthic factors responsible for increased prevalence of worm infestation are unhygienic practice, improper disposal of waste and use of polluted water. We can reduce the prevalence of these disease conditions through the study and by creating the awareness to the children about worm infestation.

N. Ramakrishna Reddy, Riyaz Basha. S (2013) were conducted a school survey to study the epidemiology of intestinal parasitic infestations among school children in Bagepalli taluk, Chikkaballapur district, Karnataka. A total of 438 stool samples were collected from school children selected from 5 rural and 3 urban schools. The stool samples collected were examined for presence of parasitic infections by direct microscopic examination. The study result shows that prevalence of intestinal parasites was 19.8%. There was a significant difference in prevalence between urban (16.3%) and rural (23.0%) school

samples. Giardia lamblia (12.6%), Ascaris lumbricoides (4.3%) and Endamoeba histolytica (1.8%) were the commonest parasites isolated. The results conclude that intestinal parasitic infestations among school children are mainly water-borne. The burden of parasitic infestations among the school children, and poor sanitary conditions in the schools, should be taken seriously by public health and school authorities. The researcher recommended the need for school periodic deworming, health education and improvement of school sanitation under school health program.

P. Aruna, City Health Officer, Coimbatore (June 2013) conducted a medical screening along with the doctors to the Corporation school students has revealed that the students suffer more from dental caries and worm infestation. The screening has revealed that 2364 (1,377girls and 987 boys) students suffer from worm infestation.A second screening test conducted in July 2013 for another set of students has only reinforced the findings of the first test in that 2,809 (1284girls, 1525 boys) students suffer from worm infestation. The Corporation doctors screened primary, middle, high and higher secondary school students – both boys and girls.Following the high prevalence of dental caries and worm infestation, the civic body has asked the doctors to conduct awareness programme for students and also teachers.

"Health for all by 2025 AD" is the slogan which gives importance to health care by the people and for the people. This will remain dream unless the children have adequate knowledge regarding identification and prevention of worm infestation.

Centers for Disease control and Prevention (CDC) states that, the later elementary years (09-11) are important in terms of social cognition. In this age, children begin to mature cognitively and can manage more complex dialogue, problem-solving, and thinking. Middle childhood years are talk to each other differently than they talk with adults. They use specialized vocabulary, phrases and slang. They talk about certain topics and they share background information. This is an important time for children to gain a sense of responsibility along with their growing independence.

UNESCO (1988) conducted a pilot study project in "games and other experimental activities for the teaching of science of children". Toys and games are synonymous with play. Almost every one like to play and such a desire continues throughout an individual's life. Psychologists say that play is not just a filling in of an empty period, or just a relaxation or leisure activity, but it is an important learning experience.

Snake & ladder game is well versed, vibrant, active and popular board game in India and it's known in many parts of Southern India. This game is associated with local custom and cultural practices and the knowledge of playing this game is been imparted through generations. Snake & ladder game always has the excitement, thrill, exhilaration for children while playing as a group. This game has been used in health programs in many developing countries and adapted to teach the children in an innovative way.

According to **J.Vishwanathan (1989),** infectious diseases are universally present but they are much common in India especially among children. If proper precautions are taken, many of these diseases can be prevented. For that knowledge of the infecting agents and host factors is very important for effective control of these diseases.

Tinu Jose (2009) conducted an experimental study to determine the effectiveness of snake and ladder game on knowledge of common ailments among 60 primary school children of Assumption English School, Bangalore. A pre-test and post-test was done and among them 75.3% had a good knowledge and 24.7% had moderate knowledge on common ailments. The post-test score was more than the pre-test score by 5%. The findings showed that the post-test knowledge scores were higher than the pre-test knowledge scores and the differences between the pre-test and post-test scores was statistically significant at 5% level ('t' $_{(59)}$ =19.16, $p<0.05$). This indicated that the game was an effective method of imparting information to the children.

Schools are the main places to get together the children and the children in schools are not only educated for knowledge, but also for good sanitary habits. The re-enforcement programme and better sanitation hygienic education in the school would decrease the infection rate among the school children. Therefore, the present study was carried out for the diagnosis of intestinal parasitic infection status among the school children and the data are important for evaluating and improving the sanitation hygienic education and system in the schools.

Many studies have shown that the incidence of diseases among school children is mainly due to lack of knowledge. Presently, in India because of bad hygiene, poor awareness, illiteracy, misbelieves, poverty and variety of allied factors are increasing the risk of worm infestation. So the need of the study is important to reduce the prevalence of worm infestation. During researcher's clinical experience in the community health area researcher found that many are practicing open field defecation, children were usually not wearing chapels even though the facilities are available for them. In addition to this majority of mothers complaint, that their children have itching in the anal area. All these factors provoked the researcher to think about this particular health problem and interested to make awareness children about worm infestation. Hence, the investigator interested to conduct the study to evaluate the effectiveness of snake and ladder game on knowledge and knowledge on practice regarding prevention of worm infestations among primary school children at selected corporation schools.

STATEMENT OF THE PROBLEM

A STUDY TO EVALUATE THE EFFECTIVENESS OF SNAKE AND LADDER GAME ON KNOWLEDGE AND KNOWLEDGE ON PRACTICE REGARDING PREVENTION OF WORM INFESTATIONS AMONG PRIMARY SCHOOL CHILDREN AT SELECTED CORPORATION SCHOOLS, COIMBATORE.

OBJECTIVES

1. To assess the level of knowledge regarding prevention of worm infestations among primary school children.
2. To assess the level of knowledge on practice regarding prevention of worm infestations among primary school children.
3. To evaluate the effectiveness of snake and ladder game on knowledge and knowledge on practice regarding prevention of worm infestations among primary school children.
4. To find out the correlation between level of knowledge and level of knowledge on practice regarding prevention of worm infestations among primary school children in experimental group.
5. To find out the association between level of knowledge and knowledge on practice regarding prevention of worm infestations among primary school children and their selected demographic variables.

OPERATIONAL DEFINITIONS

Effectiveness

It refers to the extent to which, snake and ladder game through drill has shown difference in mean pretest and post test level of knowledge and level of knowledge on practice regarding prevention of worm infestations among primary school children between 9-11 years, which is statistically significant.

Snake and ladder game

It refers to a flex game where up to six players compete to reach the finish square first. Researcher throws a dice and players move their leg forward square by square. When they land at the foot of the ladder, they go up to the top - reading the message on worm infestation (aloud) as they do so. When they land on the head of a snake, they go down to the snake tail, also reading the message in the squares. Positive messages go up the ladder; negative messages go down the snake. The messages will be discussed during the game, when the player reaches a ladder or snake. This will be implemented daily in two sessions with the duration of one hour per group.

Knowledge

It refers to the awareness of primary school children regarding meaning, risk factors, causes, clinical manifestations, management and prevention of selected worm infestation, which is measured by self administered structured questionnaire and its score.

Knowledge on Practice

It refers to the awareness of activities and behavior of children with regard to the prevention of selected worm infestation, which is measured by self administered check list and its scores.

Prevention of Worm Infestations

It refers to precautionary measures taken to avoid the occurrence of worm infestation which are the parasites with soft bodied organisms that can infest human and animals which obtain nourishment from the host such as round worm, hook worm, pinworm, whip worm and tape worm infestation.

Primary school children

It refers to both male and female children between 9-11 years of age, studying 4^{th} and 5^{th} standard at selected corporation schools, Coimbatore.

ASSUMPTIONS

- Primary school children may have inadequate knowledge regarding prevention of worm infestations.
- Snake and ladder game through drill will be an interesting way of learning among children and may have a stimulating effect on knowledge and knowledge on practice regarding prevention of worm infestations.
- Practice will be improved by acquiring adequate knowledge regarding prevention of worm infestations.
- Snake and Ladder game will develop teamwork and learn to accept winning or losing situation.
- Knowledge and knowledge on practice may be influenced by demographic variables.

HYPOTHESES

H_1:

There is a significant difference in mean pretest and post test level of knowledge regarding prevention of worm infestations among primary school children.

H2:

There is a significant difference in mean pretest and post test level of knowledge on practice regarding prevention of worm infestations among primary school children.

H3:

There is a significant difference between mean post test level of knowledge regarding prevention of worm infestations among primary school children in experimental and control group

H4:

There is a significant difference between mean post test level of knowledge on practice regarding prevention of worm infestations among primary school children in experimental and control group.

H5:

There is a significant correlation between level of knowledge and level of knowledge on practice regarding prevention of worm infestations among primary school children in experimental group.

H_6:

There will be significant association between level of knowledge regarding prevention of worm infestations among primary school children and their selected demographic variables.

H_7:

There will be significant association between level of knowledge on practice regarding prevention of worm infestations among primary school children and their selected demographic variables.

DELIMITATIONS

- The study limited to primary school children between 09-11 years of age.
- The sample limited to 120.
- Data collection period limited to 4 weeks.
- Knowledge and knowledge on practice will be assessed by self administered structured questionnaire and self administered check list.

PROJECTED OUTCOME

- The study will help to identify the level of knowledge and knowledge on practice regarding prevention of worm infestations among primary school children between 09-11 years of age.
- The study will help to prevent the complications of worm infestation such as malnutrition, iron deficiency anaemia and growth failure.
- Snake and ladder game will increase the level of knowledge and knowledge on practice regarding prevention of worm infestations among primary school children between 09-11 years of age.
- The findings of the study will help the health professionals to gain knowledge for further research.

CONCEPTUAL FRAMEWORK

A conceptual framework is a group of concepts and set of prepositions that spells out the relationship between them. The overall purpose is to make scientific findings more meaningful and generalisable.

Conceptual framework is the conceptual underpinnings of a study. It represents an understanding of the phenomenon of interest and reflects the assumptions and philosophical views of the investigator.

According to **Polit and Hungler (2013)**, a conceptual framework is interrelated concepts and abstraction that are assembled together in some rational scheme by virtue of their relevance to a common theme. It is a device that helps to stimulate research and extension of knowledge by providing with direction and impetus.

The conceptual framework for the present study was adopted from Pender's Health Promotion model (1996). The Health Promotion Model (HPM) proposed by Nola J Pender (1982; revised 1996) was designed to be a ''complementary counterpart to models of health promotion''. It defines health as a ''positive dynamic state not the absence of disease''.

Health promotion is directed at increasing a client's level of well being. The Health Promotion Model describes the multi dimensional nature of persons as they interact within their environment to pursue health.

The HPM (1996) has three components which include; individual characteristics and experience, behavior specific cognitions and affect and behavioral outcome. Within these three dimensions of the model there are a number of variables which influence an individual's commitment to a plan of action and health promoting behavior.

INDIVIDUAL CHARACTERISTICS AND EXPERIENCE

The first dimension of the model individual characteristics and experience incorporates two factors those of prior related behavior and personal factors which are biological, psychological and socio- cultural.

Prior related behavior

The model proposes that prior related behavior has ''direct and indirect'' effects on the likelihood of engaging in health promoting behaviors.

In this study it refers to, primary school children may have inadequate knowledge and knowledge on practice regarding prevention of worm infestations.

Personal factors

Personal factors are categorized as biological, psychological and socio-cultural. In this study it refers to demographic variables of primary school children.

Biological factors include age, sex.

Psychological factors includes source of health information and previous exposure to worm infestations.

Socio- cultural factors consist of religion, educational status of father and mother, occupational status of father and mother, family monthly income, type of family, total number of children in the family, type of house, dietary pattern, sources of drinking water, type of defecation, method of disposal of household waste.

BEHAVIOR SPECIFIC COGNITIONS AND AFFECT

The second dimension of the model includes behavior specific cognitions and affect which Pender and colleagues describes as critical variables that have a major significance for any health interventions, as they are able to modify. These variables include; perceived benefits of action perceived barriers to action, perceived self efficacy, activity related affect, interpersonal influences and situational influences.

Perceived benefits of action

It refers to anticipated positive outcomes that will occur from health behavior.

In this study it refers to primary school children able to gain knowledge and knowledge on practice regarding prevention of worm infestations.

Perceived barriers to action

Refers to the anticipated, imagined or real blocks and personal costs of understanding a given behavior.

In this study perceived barriers to action includes ignorance of parents and inadequate exposure to health education related to prevention of worm infestations.

Perceived self efficacy

Refers to the judgment of personal capability to organize and execute a health promoting behavior. Perceived self efficacy influences perceived barriers to action so higher efficacy result in lowered perceptions of barriers to the performance of the behavior.

In this study it refers to primary school children able to execute behavior related to prevention of worm infestations.

Activity related affect

Refers to the subjective positive or negative feeling that occurs before, during and following behavior based on the stimulus properties of the behavior itself. Activity related affect influences perceived self- efficacy, which means the more positive the subjective feeling, the greater the feeling of efficacy. In turn increased feelings of efficacy can generate further positive affect

In this study it refers to primary school children were actively participated in the snake and ladder game to gain knowledge and knowledge on practice regarding prevention of worm infestations.

Interpersonal influences

Refers to the cognition concerning behaviors, beliefs or attitudes of the others. An interpersonal influence includes norms, social support and modeling. Primary sources of interpersonal influences are families, peers and health care providers.

In this study interpersonal influence includes norms of the game, encouragement from the school teachers and peer groups.

Situational influences

Refers to the personal perceptions and cognitions of any given situation or context that can facilitate or impede behavior. Situational influences may have direct or indirect influences on health behavior.

In this study situational influence includes a favorable school environment.

BEHAVIORAL OUTCOME

The third dimension of the model is behavioral outcome which is an outcome of individual characteristics and experiences and behavior specific cognitions and affect which all influence an individual's commitment to a plan of action and health promoting behavior.

Commitment to a plan of action

Refers to the concept of intention and identification of a planned strategy leads to implementation of health behavior.

In this study it refers to the implementation of snake and ladder game in ten groups which consist of six members per group in two sessions daily with one hour duration and three drills per group to improve the knowledge and healthy behavior related to prevention of worm infestations.

Immediate competing demands and preferences

Refers to the competing demands are those alternative behavior over which individuals have low control because there are environmental contingencies such as work or family care responsibilities.

In this study low control refers to the environmental factor which includes type of house, source of drinking water, method of disposal of household waste.

Refers to the competing preferences are alternative behavior over which individuals exert relatively high control such as choice of ice cream or apple for snack.

In this study high control refers to type of family, number of children in the family and dietary pattern.

Health promoting behavior

Endpoint or action outcome directed toward attaining positive health outcome such as optimal well being, personal fulfillment and productive living.

In this study it refers to gaining knowledge about causes, signs and symptoms, complications and prevention of worm infestations and accomplishment of health promoting behavior regarding knowledge on practice such as hand washing before eating and after toileting, wearing slippers an outside, washing the vegetables by running water, cutting the nails weekly once, eating well cooked meat, use of clean toilet, wearing the tight under wear, maintain environmental hygiene and taking anti helminthic drugs every six months once.

Knowledge and knowledge on practice regarding prevention of worm infestations were classified as adequate knowledge, moderately adequate knowledge and inadequate knowledge. Adequate level of knowledge and knowledge on practice regarding prevention of worm infestations considered as health promoting behavior. Inadequate and moderately adequate level of knowledge and knowledge on practice regarding prevention of worm infestations needs reassessment and intervention to create awareness.

CHAPTER II

REVIEW OF LITERATURE

Review of literature is a key step in research process. Review of literature is a critical summary of research on a topic of interest generally prepared to put a research problem in paper content to identify gaps and weakness on previous studies to justify a new investigation. Literature review refers to an extensive, exhaustive and systematic examination of publication relevant to the research study. Here, the investigator reviewed previous studies; related research and non-research literature broaden the understanding and gain insight into the problem study.

Review of literature is a broad systematic and critical collection and evaluation of important scholarly published literature as well as unpublished materials. The review serves as an essential background for any research. **[B.T.BASAVANTHAPPA, 2004]**

According to **Polit and Hungler** (**2002**), Review of literature is a critical summary of research on a topic of interest generally prepared to put a research problem in context to identify gaps in prior studies to justify a new investigation. In this study the review was organized under following headings:

- Studies related to epidemiology of worm infestation
- Studies related to knowledge and knowledge on practice of children regarding worm infestation
- Studies related to incidence and prevalence of worm infestation.
- Studies related to causes and risk factor of worm infestation.
- Studies related to management of worm infestation.
- Studies related to complication of worm infestation.
- Studies related to prevention of worm infestation.
- Studies related to effectiveness of snake and ladder game.

Studies Related to epidemiology of worm infestation

Ostan I et.al (2007) conducted a study to determine and compare the incidence of intestinal parasitic infections and the socio-economic status of two near primary school children in Manisa, a western city of Turkey. A total of 352 children were examined and the results showed that the percentages of the students found to be infected with intestinal parasites were 39.6% and 13.4%. The factors which significantly increase the incidence of intestinal parasites were uneducated and unemployed mother, lower social status of father, living in crowded houses with insufficient indoor spaces, using the tap water as drinking water.

Studies Related to Knowledge and knowledge on practice of children regarding worm infestation

Ansu Maliyakal (August 2015) conducted an experimental study to assess the knowledge on prevention of helminthes infestation among primary school students of rural area, Ernakulum, Kerala and to assess the effectiveness of child to child concept on prevention of helminthes infestation and to find out the association between the knowledge and selected demographic variables. An evaluative research approach and one group pre and post test design which is pre experimental in nature was adopted for the study.100 primary school children in 3rd and 4th standard constituting of both boys and girls were selected through random sampling technique. The instruments used were demographic proforma, knowledge questionnaire on knowledge of prevention of worm infestation. The data collection was in 2 phases, in the first phase demographic details were collected and the knowledge of children regarding worm infestation was assessed. In the second phase 10 children were selected from the study participant group, by simple random sampling method and were given health education regarding prevention of worm infestation using educational package. These children were encouraged to disseminate their knowledge about worm Infestation to their class mates of 3rd and 4th standard using the flash cards and videos. A post test was conducted after 7 days using same structured questionnaire and knowledge of 100

study participants were assessed. The study results showed that the mean pre test knowledge was 47.56%, and mean post test knowledge was 88.7% and calculated' value =29.78 was greater than the't' value (98) =1.982, $p<0.05$. There was significant association between knowledge of children and education of the mother (fishers exact value =0.00, $p<0.05$).

Sah RB, Yadav S, Jha PK (March 2013) conducted a cross-sectional study to assess the level of knowledge and practice about worm infestation and to find out the relation of knowledge and practice with the selected variables at Dhankuta district, Nepal. 200 students of Grade 9 and 10 in Government and private schools selected by stratified random sampling technique. The study result showed that the knowledge regarding risk factors of worm infestation due to unhygienic pig farming practices was significantly higher in female (66.4%) than male (44.8%). All the risk factors were found to be significantly higher in knowledge among private school as compared to Government school. In demographic variables unemployed fathers (100%) and labor fathers (50%) were significantly associated with poor personal hygiene. In Mother Group, students never eat raw meat and vender food whose mothers have skilled worker. The school going students of Dhankuta were aware of the knowledge regarding the worm infestation but had less knowledge among the school children of Government as compared to private.

Studies related to incidence and prevalence of worm infestation:-

Nyakango N.L et.al (2015) conducted a Cross sectional survey to determining the prevalence rates of various Soil Transmitted Helminthics among preschool children aged below five years and the influence of demographic and socio-economic factors at Marani district, Kenya. Single stool specimens were collected from 106 children for the detection and identification of worm eggs using Mini Parasep, a concentration technique. A structured questionnaire was used to identify demographic and socio-economic factors which impact on infection rates .Statistical software SPSS version was used to analyze the data. The study result showed that the overall prevalence of STH in the sample was

35.8%, with single infection of 30.2% and co-infection 5.6%. Ascaris lumbricoides accounted for a prevalence rate of 19.8% followed by hookworm infection at 7.5% and Trichuristrichiura infection at 2.8%. Male children had a higher infection rate of 43.6% compared to girl children at 27.5%.The study concluded that the level of education of the parents had an influence on infection rates with higher education standards having lower infection rates. Water sources had some influence on prevalence rates with wells/rain combination having high infection rates of 25%, while river water had 22%.

K.Jayarani, Sandhya Rani T and Jayaranjani K (June 2014) conducted a cross sectional study at rural areas in Puducherry, to compare the prevalence of intestinal parasitic infections among the Pre School and School going children's and to estimate the which group was more affected. Stratified random sampling method was used to select the subjects. Group 1containing 30 preschool children between 2 to 5 years and group 2 containing 30 school going children between 6 to 12 years. Among the study population 43.3% are female and 56.7% are male .This study result showed that out of 60 study subjects, 9 of the study participants were infected with one or more parasites. Giardia was the predominant isolate (44%) followed by Ascaris lumbricoides (33%) and Endameba coli (22%). The study concluded that intestinal helminthes are prevalent in high magnitude among school children when compared to preschool children. This study emphasizes the need for health education, good sanitation and personal hygiene, proper cooking of food, safe drinking water and use of foot wears especially by the rural population.

Panna Patel, Upendra Chaudhary, Rajesh K Chudasama (April 2012) conducted a study to identify the prevalence of intestinal parasites and risk factors among children up to age of 12 years hospitalized with diarrhoea in tertiary care hospital, Surat, India. Total 298 children up to the age of 12 years except neonates, admitted in ward of paediatric department with complaints of diarrhoea during one year period from May 2011 to April 2012were included in this study. Various demographic and clinical characteristics were collected on a pretested

proforma. Stool smears were examined under light microscope with direct saline smear and lugol`s iodine solution. Parasitic detection was confirmed by formalin ethyl acetate concentration method. The study shows that the prevalence of intestinal parasites was 8.7% reported among admitted children. Most common parasite isolated was Giardia Intestinalis (5.4%) followed by ascaris lumbricoids (1.3%), hook worm (1.0%), trichomonas species (0.7%) and H. nana (0.3%). Half of study participants were male and belongs to lower socio-economic class. Toilet facility was not available for 26.8% children; 81.2% children received piped water supply of municipality. Duration of diarrhoea for more than seven days (p=0.004, OR=4.50, CI=1.59-12.67), more than ten passage of stool per day (p=0.016, OR=2.76, CI=1.20-6.34), non availability of toilet facility (p=0.007, OR=3.05, CI=1.35-6.92) reported as risk factor for intestinal parasitic infection. Such children are more likely to present with vomiting (p=0.038, OR=2.89, CI=1.06-7.90) and abdominal pain (p=0.013, OR=0.35, CI=0.15-0.80). The study concluded thatlow socio-economic status, longer duration and frequency of diarrhoea, non availability of toilet facility and presence of dehydration were leading risk factors for parasitic infection in present study.

Dr.Vasantrao Pawar (November 2012) conducted a cross-sectional study in three tribal villages of Nasik district namely Ambe Dindori, Ganorwadi and Mohadi. Total population of three villages surveyed was 9342. The study population consist of all children from 1-5 years of age residing in these three villages. The minimum sample size required was 385 children. Simple random sampling method was used to select the households. A total of 1425 children were present in the sample households and of which about 385 were randomly selected. There were 205 (53.24 %) males and 180 (46.75 %) females. The study results showed that out of 385 children, 145 (37.66%) were found positive for various intestinal parasitic infections. Highest prevalence of 37.24% was found in 3-4 years of age group and lowest (13.79%) in 1-2 years age group. The study revealed that the most common helminthic infection was Hymenolepis nana (17.24%), followed by Ascaris lumbricoides (11.72%), Ancyclostoma duodenale (4.82%) and Enterobius vermicularis (4.13%). The study concluded that frequency

of intestinal parasite infections was found to be high among pre-school children (under five years) residing in tribal area and major contributory factors included social, domestic as well as peri domestic factors related with poverty, hygiene and education. The study recommended that there was need for campaigns to create awareness about health and hygiene among parents**.**

Amar Tripura, Taranga Reang, Kaushik Tripura (2012) conducted a cross sectional study to assess mother's knowledge and practice towards worm infection of their under five children at rural village under Mohanpur Rural Development block, West district of Tripura. Among 117 mothers of under five children who were selected through systematic random sampling method and face to face interview was performed using semi-structured questionnaire. The study results showed that, 19%, 26.80% and 2.6% of respondent reported of round worm, thread worms and tape worms respectively. 23%, 19.60%, 19.60%, 23% and 14.80% reported of abdominal pain, peri anal itching, vomiting and worms in stool or worms coming through nose respectively. About 51.60% of the respondents were unable to describe even a single helminthes infection. There were significant associations observed between helminthes infection and use of types of latrine (p=0.000), hand washing after defecation (p=0.000), regular hand wash before meals (p=0.000) and regular use of foot wears (p=0.000). The study concluded that, most of the respondents being literate, intestinal helminthiasis was considered harmless and normal phenomenon. A wrong idea also prevailed that eating sugary things caused worm infestation. Other risk factors that existed were lack of hygienic behavior about washing hands & using insanitary latrines. The study recommended that the awareness generation and behavior change programs were needed in this group of population.

S. L. Choubisa et. al (September 2011) conducted a cross-sectional survey at tribal rural areas/villages of Udaipur district of Rajasthan, India to assess the evidence and prevalence of intestinal parasitic infection. A total of 224 Bhil tribal individuals with 115 males and 109 females of different age groups were selected randomly. Fresh stool samples of these tribal subjects were examined

microscopically by direct wet smear with saline and 1 % Lugol's iodine and formalin ether concentration. The study results showed that, 116 (51.78 %) were found to be infected with diverse species of intestinal parasites. Male individuals showed relatively higher (56.52 %) prevalence of infection as compared to their counterparts (46.78 %). Out of 116 infected tribal subjects, 53 (23.66 %), 33 (14.73 %) and 30 (13.39 %) were infected with protozoan, helminthes and mixed (protozoan + helminthes) parasitic infections, respectively. Maximum number of parasitic infections occurred in the age group of 6–10 years (69.23 %) in both sexes. Among the intestinal parasites, Endameba histolytica was the commonest (14.73 %) followed by Endameba coli (8.92 %), Taeniasolium (5.35 %), Ascaris lumbricoides (4.46 %), Hymenolepis nana (2.23 %), Ancylostoma duodenale (0.89 %), Strongyloides stercoralis (0.89 %), Trichuris trichiura *(*0.44 %) and Hymenolepis diminuta *(*0.44 %). The study concluded that the intestinal parasitizes were more prevalent in tribal individuals of Rajasthan, responsible for chronic morbidity in the form of nutritional and iron-deficiency anemia. Indeed, these tribal individuals are economically very poor, lack health education and live in unhygienic conditions where proper sanitation facilities are also wanting.

Khanal LK, Choudhury DR, Rai SK (December 2011) conducted an experimental study to assess the prevalence of intestinal worm infestations among school children aged between 6-16 years in a public high school in Kathmandu Nepal. A total of 142 stool samples from healthy students were collected and reported following formol-ether concentration technique. The overall prevalence of intestinal worm infestation was found to be 17.6% (Boys = 22.0% vs girls = 13.5%). Children aged 6-8 years were found to be highly infected with intestinal worms (21.4%) followed by 9-12 years old (18.6%). Those between 13-16 years of age were significantly less infected (10.7%) compared to others ($p < 0.05$). Ova/cysts of intestinal parasites detected include Trichuristrichiura (32.0%), Ascaris lumbricoides (20.0%), Hymenolepis nana (16.0%), hookworm (8.0%) and 24.0% cases showed mixed parasitic infections.

DS. Shubha and Farheen Fatima (July 2010) conducted a cross-sectional survey in the diagnostic laboratory of Microbiology department at Chitradurga, Karnataka, India. The study group was divided into four groups, namely, Group A (orphanage); Group B(residential schools); Group C(government schools); and Group D(private schools). A total of 1769 eligible children were enrolled for sampling from these schools. Out of these, 1224 stool samples were received giving the response rate of 69.1%. For each enrolled child in the study, a standard stool ova and parasite test with formol–ether concentration technique was done for the assessment of the outcome. Among 1224 participants, 714 (58.3%) were boys and 508 (41.5%) were girls. The overall prevalence of IPIs was estimated as 51.5%. Group A 84%, Group B 64.7%, Group C 62.4%, and Group D 39.3%. Single IPIs were 65.7%, among which 48% were helminthic and 19.3% were protozoan. Multiple IPIs were 34.2%, among which protozoan along with helminthic were 25.9%, poly helminthics were 8.5% and poly protozoan were 4.2%. Among the IPIs detected, overall prevalence of helminthes was 75.9%, protozoan was 24.1%. Among the helminthes hookworm was highest (28%). Among the protozoan Endameba histolytica/despair was highest (14.8%).The study concluded that prevalence of IPIs was high as 51.5%. Overall prevalence showed an endemic situation. Therefore, it was recommended that local health sectors should make provision for regular examination of parasitizes and deworming.

Studies related to causes and risk factors of worm infestation:-

SahRB, Bhattarai S, Yadav S (July 2013) conducted a cross-sectional study to measure the prevalence of intestinal parasitic infestations and to identify risk factors associated with parasitic infestations among the school children of Ithaki Municipality, Eastern Region of Nepal. Stratified random sampling method was applied to choose the schools and the study subjects from Grade VI, VII and VIII in Government and private schools. Semi-structured questionnaire was administered to the study subjects and microscopic examination of stool was done. The study result showed that the overall intestinal parasitic infestation was found

to be 31.5%. Around 13% of the study population was found to be infested with helminthic and 18.5% of the study population was infected with protozoa. Demographic variables such as not using soap after defecation, not wearing sandals, habit of nail biting and thumb sucking were found to be significantly associated with parasitic infection. The study concluded that the prevalence of intestinal parasitic infestation was found to be high in school children of Ithaki. Poor sanitary condition, lack of clean drinking water supply and education is supposed to play an important role in establishing intestinal parasitic infections.

Debalke S et. al (June 2012) conducted a comparative cross sectional study to determine and assess the prevalence of soil transmitted helminthics and their associated factors among government and private primary school children at Jimma Town, Southwest Ethiopia. Stool samples were collected from 369 randomly selected children and examined microscopically for eggs of soil transmitted helminthes following McMaster techniques. Soil samples were collected from different parts of the school compound and microscopic examination was performed for eggs of the helminthes using sodium nitrate flotation technique. The study result showed that the overall prevalence rate of soil transmitted helminthes infections in private and government schools were 20.9% and 53.5% respectively. T. trichiura was the most common soil transmitted helminthes in both schools where as hookworm infections were identified in government school students only. Type of school and sex were significantly associated with soil transmitted helminthes. Soil contamination rate of the school compounds was 11.25% with predominant parasites of A. lumbricoides. The study concluded that the higher prevalence of soil transmitted helminthes infection was found among government school students. The study recommended on personal hygiene and sanitary facilities should be given to children going to government schools.

Rostami Masoumeh, **Tohidi Farideh**, **Sharbatkhori Mitra** (**March 2011)** conducted a cross-sectional survey to determine the prevalence of intestinal parasitic infections in primary school children living in Gorgon, north of

Iran. From the 18 primary schools, the sample size was calculated according to the prevalence of 27%, based on the results of previous studies Daryani and Ettehad, 2005, at precision of 0.07 and at 0.05 significant levels. 800 school children from both boys and girls ranging from 8 to 12 years old were involved in this study. Three stool specimens were collected from each student. Specimens were examined with direct wet and formalin ethyl acetate method. Data were analyzed with SPSS version 16 software. A total of 800 schoolchildren were screened. The study results showed that nearly one third of students (28.8%) were infected with one or more intestinal parasites. The most common parasite were Giardia intestinalis (9.9%; 79/800) and H. nana (1.5%; 12/800), respectively. The data showed that Children living in crowded family (≥3) were more susceptible to infection also take care of animals in house helps to transmission of parasite infections as there was a significant association between that and rates of parasite infections (p-value<0.05). The study concluded that the prevalence of infection was also much more common in those students whose parents were less educated. The study recommended that the high percentage of school children were infected to intestinal parasites. So, intervention programs including health education and environmental sanitation are required.

Studies related to management of worm infestation

Speich B, Ame SM, Ali SM (February 2015) conducted a double-blind trial study at Pemba Island, Tanzania, to evaluate the efficacy of Oxantelpamoate-albendazole for Trichuristrichiura infection.randomly assigned children, 6 to 14 years of age, to receive one of four treatments: oxantelpamoate at a dose of 20 mg per kilogram of body weight, plus 400 mg of albendazole, administered on consecutive days; oxantelpamoate at a single dose of 20 mg per kilogram; albendazole at a single dose of 400 mg; or mebendazole at a single dose of 500 mg. We assessed the efficacy and safety profile of oxantelpamoate-albendazole when used in the treatment of T. trichiura infection (primary outcome) and concomitant soil-transmitted helminthic infection (secondary outcome). Efficacy was determined by means of assessment of the cure rate and egg-reduction rate.

Adverse events were assessed four times after treatment. The study results shows that the, Complete data were available for 458 children, of whom 450 were infected with T. trichiura, 443 with hookworm, and 293 with A. lumbricoides. The cure rate of T. trichiura infection was significantly higher with oxantelpamoate-albendazole than with mebendazole (31.2% vs. 11.8%, P=0.001), as was the egg-reduction rate (96.0% [95% confidence interval {CI}, 93.5 to 97.6] vs. 75.0% [95% CI, 64.2 to 82.0]). The cure rate with albendazole (2.6%) and the egg-reduction rate with albendazole (45.0%; 95% CI, 32.0 to 56.4) were significantly lower than the rates with mebendazole (P=0.02 for the comparison of cure rates). Oxantelpamoate had low efficacy against hookworm and A.lumbricoides. Adverse events (mainly mild) were reported by 30.9% of all children. The study concludes that the Treatment with oxantelpamoate-albendazole resulted in higher cure and egg-reduction rates for T. trichiura infection than the rates with standard therapy.

Speich .B et al (March 2014) conducted a cross sectional study to evaluate the efficacy and safety of albendazole plus ivermectin, albendazole plus mebendazole, albendazole plus oxantelpamoate, and mebendazole alone against Trichuristrichiura and concomitant soil-transmitted helminthic infections. In this randomised controlled trial, compared three drug combinations and one standard drug alone in children aged 6-14 years in two schools on Pemba Island, Tanzania infected with T trichiura and concomitant intestinal nematodes. The researcher assigned children, via a randomisation list with block sizes of either four or eight, to orally receive albendazole (400 mg) plus ivermectin (200 μg/kg); albendazole (400 mg) plus mebendazole (500 mg); albendazole (400 mg) plus oxantelpamoate (20 mg/kg); or mebendazole (500 mg) alone. The primary endpoints were the proportion of children cured of T trichiura infection and the reduction of T trichiura eggs in stool based on geometric means, both analysed by available case. The study findings showed that the randomly assigned 440 eligible children infected with T trichiura, to one of the four treatment groups (110 children per group). Data for 431 children were included in the analysis for the primary endpoints. Albendazole plus oxantelpamoate (74 of 108 children cured [68·5%, 95% CI 59·6-77·4]; egg reduction 99·2%, 98·7-99·6) and albendazole plus

ivermectin (30 of 109 cured [27·5%, 19·0-36·0]; egg reduction 94·5%, 91·7-96·3) were significantly more effective against T trichiura than mebendazole alone (nine of 107 cured [8·4%, 3·1-13·8]; egg reduction 58·5%, 45·2-70·9). Albendazole plus mebendazole had similar low efficacy (nine of 107 cured [8·4%], 3·1-13·8; egg reduction 51·6%, 35·0-65·3) to mebendazole alone. About a fifth of the children reported adverse events, which were mainly mild. Abdominal cramps and headache were the most common adverse events after treatment; abdominal cramps were reported by 13 (12·0%) children for albendazole plus ivermectin, 10 (9·3%) for albendazole plus mebendazole, 20 (18·2%) for albendazole plus oxantelpamoate and 16 (14·5%) for mebendazole; headaches were reported by 5 (4·6%) children for albendazole plus ivermectin, 6 (5·6%) for albendazole plus mebendazole, 12 (10·9%) for albendazole plus oxantelpamoate, and 7 (6·4%) for mebendazole. Finally the study was interpreted that the head-to-head comparison of three combination chemotherapies showed the highest efficacy for albendazole plus oxantelpamoate for the treatment of infection with T trichiura. Further studies should investigate the combination of albendazole plus oxantelpamoate so that it can be considered for soil-transmitted helminthiasis control programmes.

Hemant Kumar, Kalpana Jain and Rahul Jain (June 2013) conducted an true experimental study to measure the parasite load in the target population and evaluate the efficacy of antihelminthic drugs at Kashmir valley, India. All outdoor as well as indoor patients advised stool examination formed the study population and it included 2656 males and 76 females (including 6 children) belonged to age group 20–29 years. Investigations included. Stool examination and blood counts. A single-oral dose of anthelminthic drug was given to all positive cases. Stool tests were repeated after 14–21 days to evaluate cure rate. The study result shows that the overall prevalence of intestinal worm infection was found to be 49.38%. Ascaris was the most common parasite (46.88%), followed by Taenia (2.1%) and Hymenolepis nana (0.21%). The highest parasitizes was found in the age group 0–9 years (83.33%). Cure rate was found to be 66% for Ascaris and 100% in other cases. The study reveals high prevalence of

intestinal helminths in our subject population and calls for immediate control measures, including preventive chemotherapy and treatment of entire 'at risk' population and improvement of their living conditions including provision of potable water.

DeepthiKattula et.al. (August 2009) conducted a case control study to assess the prevalence and risk factors of Soil Transmitted Helminthes (STH) infection was undertaken as part of a partially WHO funded multi-country evaluation of the efficacy of albendazole in STH treatment among school children aged 6-14 years in Vellore and Thiruvanamalai districts in south India. Approximately, 17.1 per cent of the total populations in the two districts of school aged children. From that 33 randomly selected government and government aided schools (15 from Vellore and 18 from Thiruvanamalai) were screened for the presence of STH in their stool samples. The study results revealed that, total of 3706 children from the 33 schools were screened, of whom 290 (PR, 95% CI: 7.8%, 5.3-10.4%) children had STH infection. 233 (8.4%) children were positive for hookworm (PR, 95% CI: 6.3%, 3.5-9%), whereas 45 (3.3%) children were positive for A. lumbricoides (PR, 95% CI: 1.2%, 0.3-2.1%) and 30 (2.2%) for T. trichiura (PR, 95% CI: 0.8%, 0.1-1.5%), respectively. Consumption of deworming tablets (OR=0.25, $P< 0.01$) offered protection, while residing in a field hut (OR=6.73, $P=0.02$) and unhygienic practices like open air defecation (OR=5.37, $P< 0.01$), keeping untrimmed nails (OR=2.53, $P=0.01$) or eating food fallen on the ground (OR=2.52, $P=0.01$) were important risk factors for STH infection. The study indicated that school children with specific risk factors in the studied area were vulnerable subpopulation with elevated risk of STH infection. Identifying risk factors and dynamics of transmission in vulnerable groups can help to plan for effective prevention strategies.

Studies related to complications of worm infestation:-

Vani Srinivas, Ranjit Mankeshwar (2015) conducted a community based, cross - sectional study to estimate the prevalence of anaemia and the secondary objective was to assess various epidemiological factors associated with

anaemia, among 207 unmarried adolescent girls between 10 to 19 years, residing in urban field practice area of tertiary care hospital in Mumbai for one year. All study participants social demographic profile, diet history were collected. Findings of clinical examination, height and weight were recorded. Blood and stools samples were collected after obtaining verbal consent from their parents. Univariate and binary logistic regression analysis was done using SPSS 11.5 version. The study results showed that the overall prevalence of anaemia was 78.3%. Prevalence of mild, moderate and severe anaemia was 64.2%, 36.2% and 0.6% respectively. Study participants with BMI <18.5 Kg/M ^{2} had significantly higher prevalence of anaemia. 88.9% had no knowledge regarding anaemia. In logistic regression analysis body mass index, per capita income and intestinal parasites in stool were the variables independently associated with anaemia. The study concluded that the high prevalence of anaemia among adolescent girls indicates need for additional nutritional support, iron folic acid supplementation including prevention and control of worm infestation in urban communities. It would be desirable that action for improvement is initiated right at the adolescent stage, thereby ensuring adequate body stores of iron even before they marry and become pregnant.

MK. Aryal (June 2012) conducted a study among the under five children to assess the prevalence of anaemia and intestinal parasitic infestation among the tribal children of Madhya Pradesh, India. A total of 776 under five children were included in the study and blood, stool samples were collected. The results revealed that the 30.3% of the children had severe anaemia (Hb<7g/dl) and 50% children had intestinal parasites, the most common parasites were hookworm (16.3%) and A. lumbricoides (18.5%). Though hookworm ova loads indicated mild to moderate infestation in most of the children, the continued presence of worms in marginally nourished children could contribute significantly to blood loss in the intestine with resulting anaemia.

Williams Walana et.al (December 2011) conducted a retrospective study to establish the prevalence of hookworm infection among patients who reported at the parasitological laboratory of the Komfo Anokye Teaching Hospital for

intestinal parasitic investigation at Kumasi, northwest of Accra. Records of all patients referred to the parasitological laboratory of the hospital were manually reviewed for hookworm infection. Data on age, sex and status of hookworm infection either present or absent were retrieved and analyzed by using Microsoft Excel 2007 statistical package. A total of 47 147 patients was reported at the laboratory for intestinal parasitic investigation. Among these patients, 158 patient were positive, representing an overall prevalence of 0.3% (158/47 147). Among the positive cases, the study revealed that the proportion of individuals in age groups <1, 1 to 9, 10 to 19, 20 to 29 and 30 to 39 years were 2 (1.3%), 17 (10.8%), 26 (16.5%), 43 (27.2%) and 37 (23.4%) respectively. Furthermore, people in age group 40 to 49, 50 to 59 and ≥60 years were infected in the proportion of 14(8.7%), 9 (5.7%) and11(7.0%) respectively. Among the patients, 99(62.7%) females and males 59 (37.3%) were infected. The study concluded that the cumulative monthly distribution of hookworm cases from 2001 to 2011 revealed that the number of positive hookworm cases was high in April 10.8% (17/158), July 12.0% (19/158) and August 10.1% .Hookworm infestation was found to be generally high between April and August. However the overall prevalence was relatively low among the study population.

Mohammad Shoaib Khan and Shah Jehan, (March 2011) conducted a cross sectional study to determine the prevalence of Worm and protozoan infestation in primary school children between the 5-10 years of age at Bannu City. 100 children were examined and analyzed, out of which 54 positive for worm infestation. The study showed the prevalence of worm's infestation in Primary School Children of Bannu City, seven different types of worms were found, which were Ascaris Lumbricoides (roundworm), Enterobius vermicularis (Pin Worm), Hymenolepis nana (hook worm), Taenia saginata (thread worm), Endamoeba histolytica, Giardia lamblia and Ankylostoma Deudernale. Of the 100 children examined, 46 children showed no ova or cyst in their stool examination and 54 had positive for various intestinal parasites. So far the highest frequency of 15% was noted for Ascaris lumbricoides, 12% for pinworm & 10% for Hymenolepis nana, followed by Taenia saginata, Endameba histolytica, Giradia

lamblia and Ankylostoma duodenale in the percentages of 7%, 7%, 2% & 1% respectively. In this study population, very high percentages (54%) of children from various areas of Bannu City have intestinal worm infestation and majority of them (28.77%) of positive cases) have Ascaris lumbricoides. The study concluded that the main risk factors for high prevalence are poor sanitation, open field defecation, unclean stagnant water source and low economic standard.

Romano Ngui et. al (July 2009) conducted a cross-sectional study to assess the relationship between intestinal parasitic infestation (IPIs) and nutritional status of children living in remote and rural areas in West Malaysia. A total of 550 children, 254 boys and 296 girls were recruited in this study. With regards to age groups, there were a total of 30 (5.5%) young children aged 1 to 6 years and 520 (94.5%) school children aged 7 to 12 years with a median age of 10 years. The study results showed that out of the 550 children, 26.2% were anaemic, 54.9% iron deficient and 16.9% had iron deficiency anaemia (IDA). The overall prevalence of helminthes was 76.5% comprising Trichuris trichiura (71.5%), Ascaris lumbricoides (41.6%) and hookworm infection (13.5%). It was observed that iron deficiency was significantly higher in girls ($p=0.032$) compared to boys. Univariate analysis demonstrated that low level of mother's education (OR=2.52; 95% CI=1.38–4.60; $p=0.002$), non working parents (OR=2.18; 95% CI=2.06–2.31; $p=0.013$), low household income (OR=2.02; 95% CI=1.14–3.59; $p=0.015$), T. trichiura (OR=2.15; 95% CI=1.21–3.81; $p=0.008$) and A.lumbricoides infections (OR=1.63; 95% CI=1.04–2.55; $p=0.032$) were significantly associated with the high prevalence of IDA. Multivariate analysis confirmed that low level of mother's education (OR=1.48; 95 CI%=1.33–2.58; $p<0.001$) was a significant predictor for IDA in these children. The study concluded that there was a crucial need for comprehensive primary health care programme for these communities that includes periodic de-worming, nutrition supplement, improved household economy, education, sanitation status and personal hygiene are taken into consideration to improve the nutritional status of these children.

Studies related to prevention of worm infestation:-

Benjamin-Chung J, Nazneen A, Halder AK (December 2015) were conducted a cross-sectional survey (n = 1,630) in 100 villages in rural Bangladesh to measure three exposures: self-reported deworming consumption in the past 6 months, access to a hygienic latrine, and household flooring material. Collected stool samples from children 1-4 years, 5-12 years, and women 15-49 years. Performed mini-FLOTAC on preserved stool samples to detect Ascaris lumbricoides, Enterobius vermicularis, hookworm, and Trichuris trichiura ova. Approximately one-third (32%) of all individuals and 40% of school-aged children had an STH infection. Less than 2% of the sample had moderate/heavy intensity infections. Deworming was associated with lower Ascaris prevalence (adjusted prevalence ratio (PR) = 0.53; 95% CI 0.40, 0.71), but there was no significant association with hookworm (PR = 0.93, 95% CI 0.60, 1.44) or Trichuris (PR = 0.90, 95% CI 0.74, 1.08). PRs for hygienic latrine access were 0.91 (95% CI 0.67, 1.24), 0.73 (95% CI 0.43, 1.24) and 1.03 (95% CI 0.84,1.27) for Ascaris, hookworm, and Trichuris, respectively. Finished floors were associated with lower Ascaris prevalence (PR = 0.56, 95% CI 0.32, 0.97) but not associated with hookworm (PR = 0.48 95% CI 0.16, 1.45) or Trichuris (PR = 0.98, 95% CI 0.72, 1.33). Across helminths and combinations of exposures, adjusted prevalence ratios for joint exposures were consistently more protective than those for individual exposures. This study concluded that one of the first to examine independent and combined associations with deworming, sanitation, and hygiene. The results suggested that coupling deworming with sanitation and flooring interventions may yield more sustained reductions in STH prevalence.

Staudacher O et. al (July 2014) conducted a study to assess the prevalence associated factors and manifestation of STH infection among schoolchildren in southern highland Rwanda as well as cure and re infection rates. 622 children (rural, 301; urban, 321) were included preceding the administration of a single dose of 500 mg mebendazole. Before treatment, and after 2 and 15 weeks, STH infection was determined by Kato-Katz smears and by PCR assays for Ascaris lumbricoides. Clinical and anthropometric data, socio-economic status

and factors potentially associated with STH infection were assessed. The study result showed that the Soil-transmitted helminths (STH) infection was present in 38% of rural and in 13% of urban schoolchildren. Ascaris lumbricoides accounted for 96% of infections. Factors associated with STH infection differed greatly between rural and urban children. Likewise, STH infection was associated with stunting and anaemia only among urban children. The cure rate after 2 weeks was 92%. Among eight non-cleared Ascaris lumbricoides infections, seven were sub microscopic re -infection within 3 months occurred in 7%, but the rate was higher among rural children, and with initially present infection, particularly at comparatively high intensity. The study concluded that in southern Rwanda, mebendazole was highly effective against the STH infections predominated by Ascaris lumbricoides.

Kaewpitoon SJ, Loyd RA, Kaewpitoon N(April 2012) conducted a cross sectional survey to determine the STH infections among the schoolchildren in the Thailand and Champassak, including their caregiver knowledge and attitude concerning prevention of STHinfections.1,957 faecal samples were collected from children aged between 5-12 years in five districts . Faecal samples were prepared by the modified formalin ethyl acetate concentration technique, and determined by light microscope. The knowledge and attitude of children's caregivers concerning prevention of soil-transmitted helminth infections were completed interviewed by semi-structured questionnaires. The study result showed that the overall intestinal helminth prevalence rate was 11.88%. Classified by species the STHs were as follows: Ascaris lumbricoides (30.9%), Trichuris trichiura (21.7%) and hookworm (20.5%). The highest prevalence was recorded in children aged 9 years and above. The intensities of infection with A. lumbricoides, T trichiura, and Hookworm were 1.82 ± 0.36, 1.32 ± 0.30, and 1.29 ± 0.32, respectively. 1,077 of caregivers were completed interviewed and found that the caregivers had fair levels of knowledge and attitude regarding soil-transmitted helminthiasis. These results suggested that priority should be given to STH eradication, the development of control programs and the provision of education about STH to caregivers to reduce the risk of STH infection in their schoolchildren.

Gabrie JA, Rueda MM, Canales M (2011) conducted a cross-sectional study to investigate the risk factors associated with STH infections in schoolchildren living in rural Honduras. A total of 320 children completed the study. Prevalence for any STH and for Ascaris lumbricoides, Trichuristrichiura and hookworms were: 72.5%, 30.3%, 66.9% and 15.9%, respectively. A number of risk factors were identified at the individual, household, and school level. Boys were at increased odds of infection with hookworms (OR 2.33, 95% CI = 1.23-4.42). Higher socio-economic status in the family had a protective effect against infections by A. lumbricoides (OR 0.80, 95% CI = 0.65-0.99) and T. trichiura (OR 0.77, 95% CI = 0.63-0.94).Low school hygiene conditions significantly increased the odds for ascariasis (OR 14.85, 95% CI = 7.29-30.24), trichuriasis (OR 7.32, 95% CI = 3.71-14.45), mixed infections (OR 9.02, 95% CI = 4.66-17.46), and ascariasis intensity of infection (OR 3.32, 95% CI = 1.05 -10.52).Children attending schools not providing deworming treatment or that had provided it only once a year were at increased odds of ascariasis (OR 10.40, 95% CI = 4.39-24.65), hookworm (OR 2.92, 95% CI = 1.09-7.85) and mixed infections (OR 10.57, 95% CI = 4.53-24.66). The study concluded that the poverty-reduction strategies will ultimately lead to sustainable control of STH infections in Honduras, but as shorter-term measures, uninterrupted bi-annual deworming treatment paired with improvements in school sanitary conditions may result in significant reductions of STH prevalence among Honduran schoolchildren.

Studies related to effectiveness of snake and ladder game

Dr.Suppiah Nachiappan et. al (June 2014) conducted an experimental study to examine the using of snake and ladder game as a learning medium for those students with this learning difficulties. Research was conducted through qualitative research methods. Observations were carried out on five people with learning difficulties from one of the secondary schools in the district of Hulu Selangor to find out whether snake and ladder game can be used as a medium in learning mathematics. The finding of this study showed that the usage of snake and ladder game enhances the cognitive development of the student with learning difficulties in learning Mathematics.

Maheswari UN et. al (2014) conducted a study to compare the effectiveness of conventional and game-based oral health education on the oral health-related knowledge and oral hygiene status among 5- to 10-year-old school children **.**A total of 120 children aged 5 to 10 years were divided into 2 groups. Each group had 30 children aged 5 to 7 years and 30 children aged 8 to 10 years. A pre test evaluation of their knowledge regarding oral health and the estimation of Debris Index-Simplified (DI-S) was carried out. Children in group A were given oral health education through flash cards once daily for 7 days. Children in group B were educated through the play method (i.e. snakes and ladders game combined with flash cards). The evaluations regarding oral hygiene and DI-S were recorded on post-intervention day 1 and 3 months after the intervention. In group B, high knowledge scores of 14.6 and 14.47 were obtained by the 5- to 7-year-olds and 8- to 10-yearolds, respectively, on post-intervention day 1. The lowest mean percentage difference of 8.9 was seen in 5- to 7-yearold children of group A after 3 months. In group B (5-7 and 8-10) and group A (8-10) there was a significant increase in good oral hygiene scores and a significant decrease in fair and poor debris scores on post-intervention day 1 and at the 3-month follow-up. The knowledge scores of both the younger and older groups of children increased considerably when the game-based teaching intervention was used. Hence, it can be an effective aid for teaching basic oral health concepts to children.

Ulil Albab (April 2014) conducted an experimental study to improve students mastery of simple past tense in constructing recount texts study concerns with the use of snake and ladders game medium. The purposes of this study are to show whether snakes and ladders game gives contribution to improve the students' mastery of simple past tense in constructing recount texts and to find out whether snakes and ladders game gives the significant difference or not. Quasi-experimental research was used. The population of this study was the eighth grade students of SMP N 2 Demak. The experimental group consisted of 30 students and the control group also consisted of 30 students. There were four meetings during the experiment. Before the experiment was conducted, a pre-test was given to both groups. A post-test was given after the experiment was done. To find out the significant difference statistically, t-test formula was used. Before applying the

formula, the data were checked by using normality and homogeneity. The result showed that the data have normal distribution and homogeneity. The result of t-test was 3.41, for $\alpha = 5\%$ with df = 58, t-table = 2.002. It means that the t-value was higher than the t-table (3.41 > 2.002). The purposes of this study were achieved because the students' mastery of simple past tense in constructing recount texts improves. Then, the t-value of the post test was higher than the t-table; it means that the use of snakes and ladders gives the significant difference. In fact, based on this study the use of snakes and ladders game was effective and applicable enough as a teaching medium to be used in improving the student's mastery of simple past tense in constructing recount texts.

Deanna Telner et. al (September 2010) conducted an experimental study to evaluate the knowledge gained from game-based learning versus traditional case-based learning in a continuing medical education (CME) event on stroke prevention and management. Thirty two family physicians and 3 senior residents (N = 35) watched a 30 minute video about stroke prevention and management and were then randomly assigned into two groups (n = 17 case-based group; n = 18 game-based group). The game-based groups played "Snakes and Ladders." All participants took a 40-point multiple choice knowledge exams. Results showed that the game based group strongly agreed that the event was enjoyable [game-based = 94%; case based = 53%], that their attention was high throughout the event [game-based = 88%; case-based = 41%], and that they would register for a similar event in the future [game-based = 82%; case-based = 41%]. The study concluded that the Games provide a novel way of organizing CME events. They might provide more group interaction and discussion, as well as improve recruitment to CME events. They might also provide a forum for interdisciplinary CME. Using games in future CME events appears to be a promising approach to facilitate participant learning.

Novarina Dina (2010) conducted a research in FY ABA 01 Miles, Indonesia in relation to the use of the snake and ladder game. The research which is entitled "The Use of Snake and Ladder Game in order to Improve Cognitive

Ability. Among Children to Understand the Concept of Number 1-10 at TK ABA 01 Batu" was to describe the use of the snake and ladder game to enhance students' cognitive ability to understand the concept of numbers up to ten and to describe an increase in the cognitive ability of students to understand the concept of numbers up to ten in group A TK ABA 01 Batu. Through the observation, the results are through the experience of this activity; it was proven that this learning activity was fun and meaningful. Learning quality has been more innovative and can be used as motivation to do other research.

Arinil Janah (2009) had conducted a research on the use of snake and ladder game in class to enhance students' understanding in learning at one of the schools in Indonesia. The study involved the students in primary two of the school. The results shown are that snake and ladder game successfully enhance students' active participation and be expressive during learning. In addition, learning becomes fun with the use of media learning. Honesty was involved in this game too.

Celmira Vesga –Gomez (November 2009) conducted an experimental study was to evaluate the effectiveness of primary-school children's play-based education for improving knowledge about Dengue prevention, control and practice at Bucaramanga. This was a before-after type intervention study .A group of leading primary-school children received play-based education about Dengue and leadership after they had been surveyed regarding their knowledge about dengue control practices. Then they signed commitments to implement action with family and neighbours; they were followed-up for four months and home visits were made to assess commitment and repeat the survey. Data was compared before and after, by Chi2 test, considering $p<0.05$ to be significant. Follow-up was completed for 89 of the 99 children (90 %). There were significant increases in knowledge about dengue as a disease (from 73 % to 95.5 %), as being very severe (82 % to 96.6 %), being transmitted by mosquitoes (82 % to 100 %), being caused by virus (1.1 % to 19.1 %), in recognizing larvae (54 % to 95.5 %) and breeding sites (43 % to 88 %), recognizing symptoms of fever (67.4 % to 97.8 %), pain in

the bones (21.3 % to 62.9 %), headache (37.1 % to 64 %) and bleeding (16.8 % to 42.7 %), in the need for opportune consultation (77.5 % to 98.9 %), spraying (22.5 % to 47.2 %) and washing out water tanks (67.5 % to 89.7 %). The children fulfilled their commitment and creatively and inventively engaged in more activities. The study concluded that the Play-based education was effective in improving knowledge and practice regarding dengue prevention.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology is the overall plan for addressing the research problem. It covers multiple aspects of the study's structure. It acts as a guide for planning, implementation and analysis of the study. It includes the descriptions of the research approaches, research design, dependent and independent variables, sampling design, sampling criteria, description of the tool, pilot study and a planned format for data collection and a plan for data analysis. The research methodology involves systematic procedure which the researcher starts from initial identification of the problem to its final conclusion.

The role of the methodology consists of procedure and techniques for conducting study. (**Polit and Hungler**, **2004**)

This chapter deals with the methodological approach of the study. The purpose of the present study was to evaluate the effectiveness of snake and ladder game on knowledge and knowledge on practice regarding prevention of worm infestations among primary school children at selected corporation schools, Coimbatore.

RESEARCH APPROACH

The research approach tells the researcher from whom the data is to be collected, how to collect it and how to analyze them. It also suggest possible conclusions and help the researcher in answering the questions in the most accurate and efficient way. (**Celia**. **E**. **Willis, 2004**).

The research approach used for the study was quantitative evaluative approach.

RESEARCH DESIGN

Research design is a blue print to conduct a study that maximizes control over factors that could interfere with the validity of the findings (**Nancy Burns 2005**).

The research design used for the study was true experimental design. (Pretest- post-test control group design).

The design adopted for the present study as follows

RE O1 x O2

RC O1 O2

RE - Randomized Experimental group

RC - Randomized Control group

O1- Pre test assessment of the level of knowledge and level of knowledge on practice regarding prevention of worm infestation before implementing snake and ladder game in experimental and control group.

X - Intervention (snake and ladder game)

O2- Post test assessment of the level of knowledge and level of knowledge on practice regarding prevention of worm infestation after implementing the snake and ladder game in experimental and control group.

RESEARCH VARIABLES UNDER THE STUDY

Independent variable:

Snake and ladder game

Dependent Variable:

Knowledge and knowledge on practice

Study Setting

Setting is the physical location and condition in which data collection take place. (**Polit** and **Hungler 2004**).

The study was conducted at Rathinapuri, New Siddhapudur Corporation Schools, Coimbatore and Tamil Nadu. The selection of the study set up was based on feasibility of Conducting the study and availability of subjects.

The Rathinapuri corporation school was located 1.5kms from Kongunadu College of nursing. It is coming under Coimbatore Municipal Corporation. The total numbers of students studying from 1st standard to 5th standard at Rathinapuri Corporation elementary school was 534. The accessible population was 210 (120+90) who were studying 4th and 5th standard.

The New Siddhapudur Corporation elementary school was located 2kms from Kongunadu College of Nursing. It is coming under Coimbatore Municipal Corporation. The total number of students studying from 1st standard to 5th standard at New Siddhapudur Corporation elementary school was 452. The accessible population was 150 (90+60) who were studying 4th and 5th standard.

POPULATION

Population is defined as the entire aggregation of cases that meet a designated set of criteria (**Polit and Hungler2004**).

Target population

The target population for the present study was primary school children studying at corporation schools.

Accessible population

The accessible population for the present study was Primary School children between 9-11 years studying 4th and 5th standard from Rathinapuri and Siddhapudur Corporation primary schools, Coimbatore.

SAMPLE AND SAMPLING

Sample

Sample is the subset of the population selected to participate in a research Study. In this study the sample consists of Primary School children between 9-11years studying 4^{th} and 5^{th} standard from Rathinapuri and Siddhapudur Corporation primary schools who were fulfilled the inclusion criteria.

Sampling technique

The sampling technique is the process of selecting a portion of the Population to represent the entire population. (**Polit and Hungler1999**)

Disproportionate Stratified sampling technique was used to select the samples for the present study.4^{th} and 5^{th} standard was considered as strata. Every 4^{th} sample of total 120 students studying from 4^{th} standard and every 3^{rd} samples from 90 students of 5^{th} standard were selected as a sample for the present study.

Sample size

The sample size includes 120; in which 60 samples from Rathinapuri corporation primary school for experimental group and 60 samples from New Siddhapudur corporation primary school for control group were selected for the present study who fulfilled the inclusion criteria.

SAMPLING CRITERIA

Inclusion criteria

Primary School children

- ✓ who were in the age group of 9-11years studying 4^{th} and 5^{th} standard.
- ✓ both male and female.
- ✓ who were available at the time of data collection.
- ✓ who were willing to participate in the study.

Exclusion criteria

Primary School children who were

- ✓ sick at the time of data collection.
- ✓ had lower limb disabilities.
- ✓ mentally challenged .

METHOD OF DATA COLLECTION

i) Tool

The tool was developed after extensive review of literature, internet sources and discussion with experts.

- Self administered structured questionnaire was used to assess the level of knowledge regarding prevention of worm infestations among primary school children.
- Self administered Check list was used to assess the level of knowledge on practice regarding prevention of worm infestations among primary school children.

ii) Description of the tool

The instrument used in this study consists of the following sections:

Section A: Demographic profile of primary school children

This section consists of self administered structured questionnaire to elicit the demographic data of primary school children. Which includes 17 items, such as age, sex, religion, educational status of father and mother, occupational status of father and mother, family monthly income, type of family, total number of children in the family, type of house, dietary pattern, source of drinking water, type of defecation, method of disposal of household waste, sources of health information and previous exposure to worm infestation.

Section B: Self administered structured questionnaire regarding prevention of worm infestations

Self administered structured questionnaire which includes 24 Multiple Choice Questions to assess the level of knowledge among primary school children on prevention of worm infestations such as round worm, hook worm, pin worm, whip worm and tape worm infestations.

Section C: Self administered Check list regarding prevention of worm infestations

Self administered Check list which includes 15 items to assess the level of knowledge on practice regarding prevention of worm infestations among primary school children.

Scoring procedure and interpretation

In self administered structured knowledge questionnaire each correct and incorrect response carries one mark and zero marks respectively with maximum score of 24.

Table No.3.1 Scoring interpretation for level of knowledge

S. No	Level of knowledge	Score	Percentage
1.	Inadequate knowledge	00-08	0%- 33%
2.	Moderately Adequate knowledge	09-15	34%-63%
3.	Adequate knowledge	16-24	64%-100%

In Self administered check list regarding knowledge on practice regarding prevention of worm infestations includes YES or NO options in which YES response carries one mark and NO response carries 0 marks with maximum score of 15.

Table No. 3.2. Scoring interpretation for level of knowledge on practice

S. No	Level of knowledge on practice	Score	Percentage
1.	Inadequate knowledge on practice	00-05	0%- 33%
2.	Moderately Adequate knowledge on practice	06-10	34%-67%
3.	Adequate knowledge on practice	11-15	68%-100%

Ethical consideration

Prior written permission was obtained from the corporate commissioner and corporation educational officer. Verbal consent was obtained from the samples to conduct the study and assurance was given for the confidentiality of the information given by the samples.

Content validity

Validity refers to the degree to which an instrument measures what it is suppose to measure (**Polit and Hungler 2013**)

Validity is the most important simple methodological criteria for evaluating any measuring instrument. Four Experts from the field of child health Nursing and one expert from pediatric medicine were examined the tool for its relevancy and accuracy. Corrections given by the experts were incorporated and based on the opinion of the experts the tool was modified.

Reliability

Reliability reflects how accurately the measures yield the same result on repeated measures. (**Polit and Hungler 2004**)

- The internal consistency of the self administered structured questionnaire regarding level of knowledge on prevention of worm infestations was assessed by split half method r =0.7 by using Karl Pearson formula.
- The equivalence of the self administered check list regarding knowledge on practice on prevention of worm infestations was established by interrater method r = 0.8 by using Karl Pearson formula.

- The' r' values showed that the self administered structured questionnaire and check list were found to be reliable.

Pilot Study

Pilot study is small scale version of final run of major study. (**Polit and Hungler 2004**).

The pilot study was conducted to test the feasibility, relevance and practicability of the study. After obtaining permission from district commissioner, corporation educational officer & school head master the pilot study was conducted. The Pilot study was conducted at Pappanaikanpalayam corporation middle school and Avarampalayam corporation primary school, Coimbatore from 25th January 2016 to 30th January 2016.

The total numbers of students studying from 1st standard to 8th standard at Pappanaikanpalayam corporation middle school was 175. The accessible population was 48 (12+36) who were studying 4th and 5th standard. The Pappanaikanpalayam corporation middle school was located 3kms from Kongunadu College of Nursing which was selected as experimental group. It is coming under Coimbatore Municipal Corporation.

The total numbers of students studying from 1st standard to 5th standard were in at Avarampalayam Corporation elementary school was 250. The accessible population was 72 (48+24) who were studying 4th and 5th standard. The Avarampalayam elementary school was located 4 kms from Kongunadu College of Nursing which was selected as control group. It is coming under Coimbatore Municipal Corporation.

Sample size includes 12 in which 6 samples from 4th standard and 6 samples from 5th standard were selected by using Disproportionate Stratified sampling technique for the present study.4th and 5th standard was considered as strata. By using random method six samples from 4th standard and six samples from 5th standard was selected for both experimental and control group. Self administered structured questionnaire and Self administered check list was administered to

assess the level of knowledge and level of knowledge on practice regarding prevention of worm infestations among primary school children. Snake and ladder game on prevention of worm infestation was implemented on the next day of pre test in experimental group for continuous three days. After five days the post test was conducted with the same Self administered structured questionnaire and self administered check list for both the experimental group and control group. The pilot study showed that the study was found to be feasible.

DATA COLLECTION PROCEDURE

Formal permission was obtained from the district commissioner and corporation educational officer to conduct the study. Verbal Consent of the primary school children (9-11years) to participate in the study was obtained. The data was collected during the month of March 2016. First two days was used to select the sample for both experimental and control group. The investigator was explained the purpose of the study and then selects 60 samples by means of disproportionate stratified random sampling technique. The questionnaires were developed in English and translated into Tamil. On the 3rd day, In Rathinapuri corporation school, samples were gathered by the investigator in a group and a self administered structured questionnaire and self administered check list was distributed at a same time to the samples to elicit the demographic data and to assess the pretest level of knowledge and knowledge on practice regarding prevention of worm infestations. The students were instructed to fill in the questionnaire on their own, without copying from each other. After 45 minutes the questionnaire was collected from the samples. The snake and ladder game was implemented to the Experimental group samples as per the following schedule.

Table No.3.3 Intervention Schedule

NAME OF THE GROUPS	DATE		DATE		DATE	
	07/03/2016to11/03/2016		14/03/2016to18/03/2016		21/03/2016to25/03/2016	
	MORNING	EVENING	MORNING	EVENING	MORNING	EVENING
GROUP A(6+6)	4th STD	5th STD	4th STD	5th STD	4th STD	5th STD
GROUP B(6+6)	4th STD	5th STD	4th STD	5th STD	4th STD	5th STD
GROUP C(6+6)	4th STD	5th STD	4th STD	5th STD	4th STD	5th STD
GROUP D(6+6)	4th STD	5th STD	4th STD	5th STD	4th STD	5th STD
GROUP E(6+6)	4th STD	5th STD	4th STD	5th STD	4th STD	5th STD

It is a flex game where up to six players compete to reach the top most square first. The samples were divided in five groups. Each group consists of six samples. The flex game was played in two sessions (morning and evening) per day. The investigator was thrown a dice and players were moves their leg forward square by square. When they land at the foot of the ladder, they go up to the top - reading the message on worm infestations (aloud) as they do so. When they land on the head of a snake, they go down to the snake tail, also reading the message in the squares. Positive messages go up to the ladder; negative messages go down to the snake. The messages were discussed by the players during the game; either the player reaches a ladder or snake. Each group has a chance for playing snake and ladder game three times. The duration of each game was one hour. Then a post test was conducted after completion of 3 drills per group as per schedule. After 5 days, on 30th march 2016, post test was conducted for experimental group samples by using the same self administered structured questionnaire and self administered check list. On the 4th day, in Siddhapudur corporation school the same pretest procedure was conducted for control group samples. On 31st march 2016, posttest was conducted for control group samples by using the same self administered structured questionnaire and self administered check list.

PLAN FOR DATA ANALYSIS

The data obtained were analyzed in terms of objectives of the study using descriptive and inferential statistics. The plan for the data analysis was as follows:

Table 3.4 .Plan for data analysis

Type of statistics	Method	Purposes
Descriptive statistics	Frequency, Percentage, Mean, Mean difference, Standard Deviation and Mean percentage.	To analyze the selected demographic Variables of the samples of both experimental and control group. Level of knowledge and knowledge on practice regarding prevention of worm infestations.
Inferential Statistics	Paired "t" test	To find out the effectiveness of snake and ladder game on level of knowledge and level of knowledge on practice regarding prevention of worm infestations.
	Independent "t" test	To Compare the mean post test level of knowledge and knowledge on practice regarding prevention of worm infestation among primary school children between experimental and control group.
	Karl Pearson method	To find out the co-relation between level of knowledge and level of knowledge on practice regarding prevention of worm infestations among primary school children in experimental group.
	Chi square test	To find out the association between the level of knowledge and level of knowledge on practice regarding prevention of worm infestation among primary school students and their selected demographic variables for both experimental and control group.

SUMMARY

This chapter includes description of research approach, research design, Study setting, target population, accessible population sample and sampling technique, Selection criteria, selection and development of the tool, content validity and reliability, pilot study, data collection procedure and plan for data analysis.

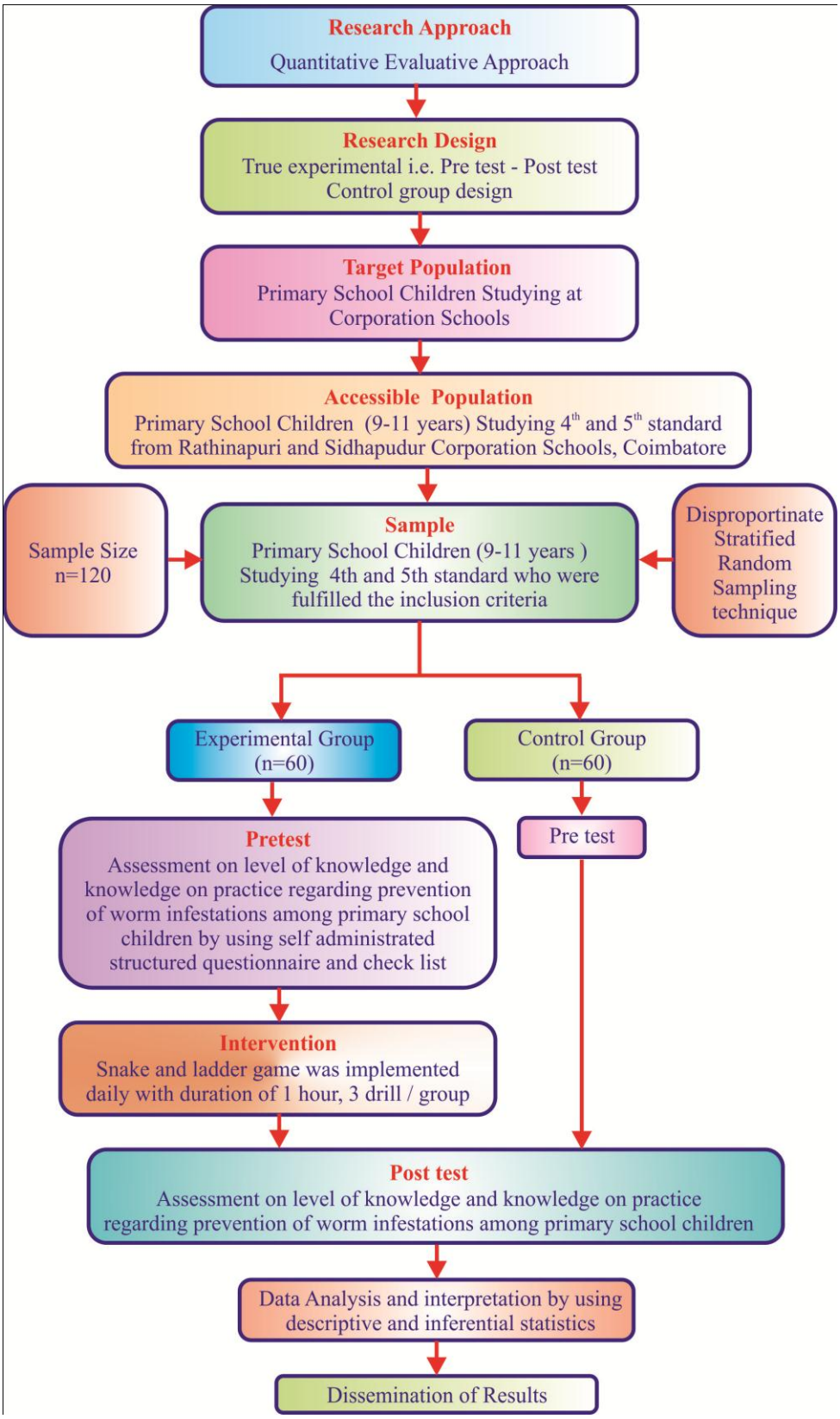

Figure 3.1 Schematic representation of Research Methodology

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of the data on effectiveness of snake and ladder game on knowledge and knowledge on practice regarding prevention of worm infestations among primary school children between the age group of 9 to 11 years.

Polit and Hungler (2006) states that, the statistical analysis helps the researcher to make sense of quantitative information. Statistical procedure enable researcher to summarize, evaluate, interpret and communicate numeric information.

The data collected through self administered structured questionnaire and self administered check list were analyzed by using descriptive and inferential statistics which are necessary to provide substantive summary by the results in relation to the objectives.

OBJECTIVES

1. To assess the level of knowledge regarding prevention of worm infestations among primary school children.
2. To assess the level of knowledge on practice regarding prevention of worm infestations among primary school children.
3. To evaluate the effectiveness of snake and ladder game regarding prevention of worm infestations among primary school children.
4. To find out the correlation between level of knowledge and level of knowledge on practice regarding prevention of worm infestations among primary school children in experimental group.
5. To find out the association between level of knowledge and knowledge on practice regarding prevention of worm infestations among primary school children and their selected demographic variables.

PRESENTATION OF DATA

The analysis of the data is organized and presented under the following broad section.

Section A

Frequency and percentage distribution of samples according to their demographic variables.

Section B

Assess the level of knowledge and knowledge on practice regarding prevention of worm infestations among samples both experimental and control group.

Section C

Comparison of mean pre-test and post-test scores on level of knowledge and level of knowledge on practice regarding prevention of worm infestations among experimental and control group.

Testing hypotheses:

Section D

Effectiveness of snake ad ladder game on level of knowledge and knowledge on practice regarding prevention of worm infestation.

Section E

Find out the correlation between level of knowledge and knowledge on practice regarding prevention of worm infestations among primary school children in experimental group.

Section F

Association between the level of knowledge and knowledge on practice regarding prevention of worm infestations among samples and their selected demographic variables.

SECTION-A

Frequency and Percentage distribution of samples according to their demographic variables.

Table 4.1. Frequency and percentage distribution of samples according to their demographic variables

n=120

S. No	Demographic variables	Experimental group (n=60)		Control group (n=60)	
		(f)	(%)	(f)	(%)
1.	Age				
	1.1) 9 Years	18	30	15	25
	1.2) 10 Years	25	42	36	60
	1.3)11 Years	17	28	9	15
2.	Sex				
	2.1) Female	29	48	36	60
	2.2) Male	31	52	24	40
3.	Religion				
	3.1) Hindu	47	78	47	78
	3.2) Christian	9	15	7	12
	3.3) Muslim	4	7	6	10
	3.4) Others	0	0	0	0

S. No	Demographic variables	Experimental group (n=60)		Control group (n=60)	
		(f)	(%)	(f)	(%)
4.	Educational Status of father				
	4.1) No formal education	14	23	11	18.3
	4.2) Primary education	24	40	17	28.3
	4.3) High School education	15	25	14	23.3
	4.4) Higher secondary education	6	10	7	12
	4.5) Graduate	1	2	11	18
5.	Educational Status of mother				
	5.1) No formal education	12	20	16	27
	5.2) Primary education	22	37	18	30
	5.3) High School education	17	28	11	18
	5.4) Higher secondary education	6	10	12	20
	5.5) Graduate	3	5	3	5
6.	Occupational Status of father				
	6.1) Government employee	3	5	12	20
	6.2) Private employee	3	5	10	17
	6.3) Self employee	10	17	8	13
	6.4) Coolie	40	66	26	43
	6 .5) Unemployed	4	7	4	7
7.	Occupational Status of mother				
	7.1) Home maker	22	37	24	40
	7.2) Government employee	9	15	6	10
	7.3) Private employee	9	15	1	2

S. No	Demographic variables	Experimental group (n=60)		Control group (n=60)	
		(f)	(%)	(f)	(%)
	7.4) Self employee	6	10	8	13
	7.5) Coolie	14	23	21	35
8.	Family monthly income				
	8.1) ≤ Rs.5000/	25	42	8	13
	8.2) Rs.5001/ to Rs.10, 000/-	16	26	27	45
	8.3) Rs.10, 001/ to Rs.15, 000/	9	15	16	27
	8.2) > Rs.15, 000/	10	17	9	15
9.	Type of family				
	9.1) Nuclear family	40	67	35	58.3
	9.2) Joint family	14	23	23	38.3
	9.3) Extended family	6	10	2	3.33
10.	Total number of children in the family				
	10.1) One child	3	5	6	10
	10.2) Two child	36	60	35	58
	10.3) Three child	14	23	16	27
	10.4) >Three child	7	12	3	5
11.	Type of house				
	11.1) Pucca	39	65	34	57
	11.2) Kutcha	21	35	26	43
12.	Dietary pattern				
	12.1) Vegetarian	10	17	18	30
	12.2) Non- Vegetarian	50	83	42	70

S. No	Demographic variables	Experimental group (n=60)		Control group (n=60)	
		(f)	(%)	(f)	(%)
13.	Source of drinking water				
	(Public corporation water)				
	13.1) Inside the house	21	35	9	15
	13.2) Outside the house	39	65	51	85
14.	Type of defecation				
	14.1) Open field defecation	6	10	12	20
	14.2) Household toilet	32	53	27	45
	14.3) Public toilet	22	37	21	35
15.	Method of disposal of household waste				
	15.1) Corporation dust bin	57	95	38	63
	15.2) Dumping	1	2	4	7
	15.3) Composting	2	3	11	18
	15.4) Burning	0	0	7	12
16.	Sources of health information				
	16.1) Health care team members	18	30	10	17
	16.2) Media	2	3.33	9	15
	16.3) Parents	20	33.33	21	35
	16.4) Teachers	20	33.33	20	33
17.	Previous exposure to worm infestation				
	17.1) Yes	18	30	23	38
	17.2) No	42	70	37	62

PERCENTAGE DISTRIBUTION OF SAMPLES ACCORDING TO THEIR DEMOGRAPHIC VARIABLES

4.1 Percentage distribution of samples according to their demographic variables in Experimental and Control group

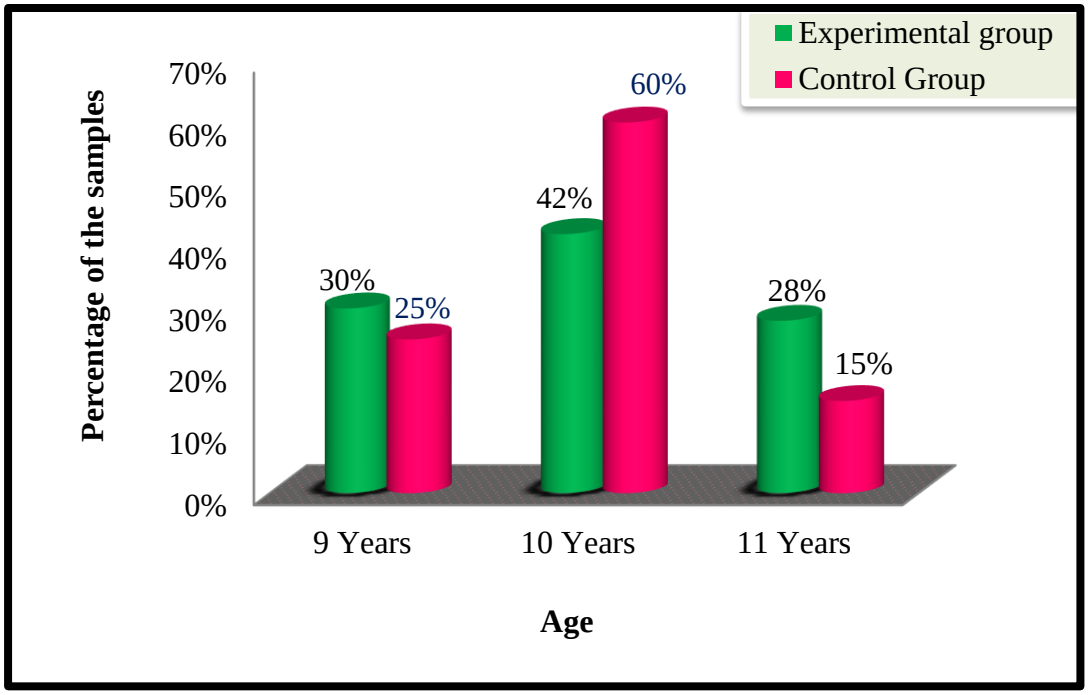

Figure 4.1.1 Percentage distribution of samples according to their Age in Experimental and Control group

The data presented in the figure 4.1.1 shows that, in experimental group nearly half 25 (42%) of the samples were in the age group of 10 years whereas 18 (30%) children were in the age group of 9 years and 17 (28%) children were from the age group of 11 years.

In control group, more than half 36 (60%) of the samples were in 10 years of age whereas 15 (25%) children were in the age group of 9 years. However the least percentage 9 (15%) of the children were belongs to the age group of 11 years.

In both the groups the highest samples were in the age group of 10 years.

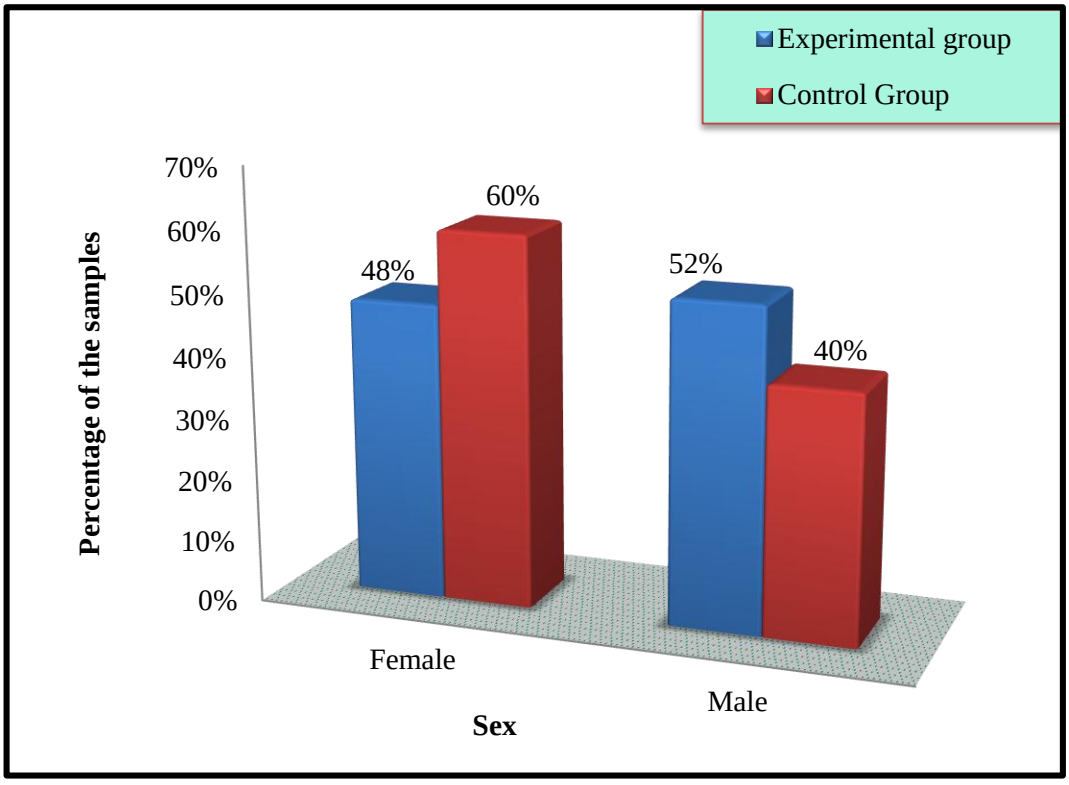

Figure 4.1.2 Percentage distribution of samples according to their Sex in Experimental and Control group

The above figure 4.1.2 shows that, in experimental group around half 31 (52%) of the total number of the children were male and 29 (48%) were female.

In control group, highest number of the children 36 (60%) were female and 24 (40%) children were male.

The male and female samples were more or less equally distributed in both the groups.

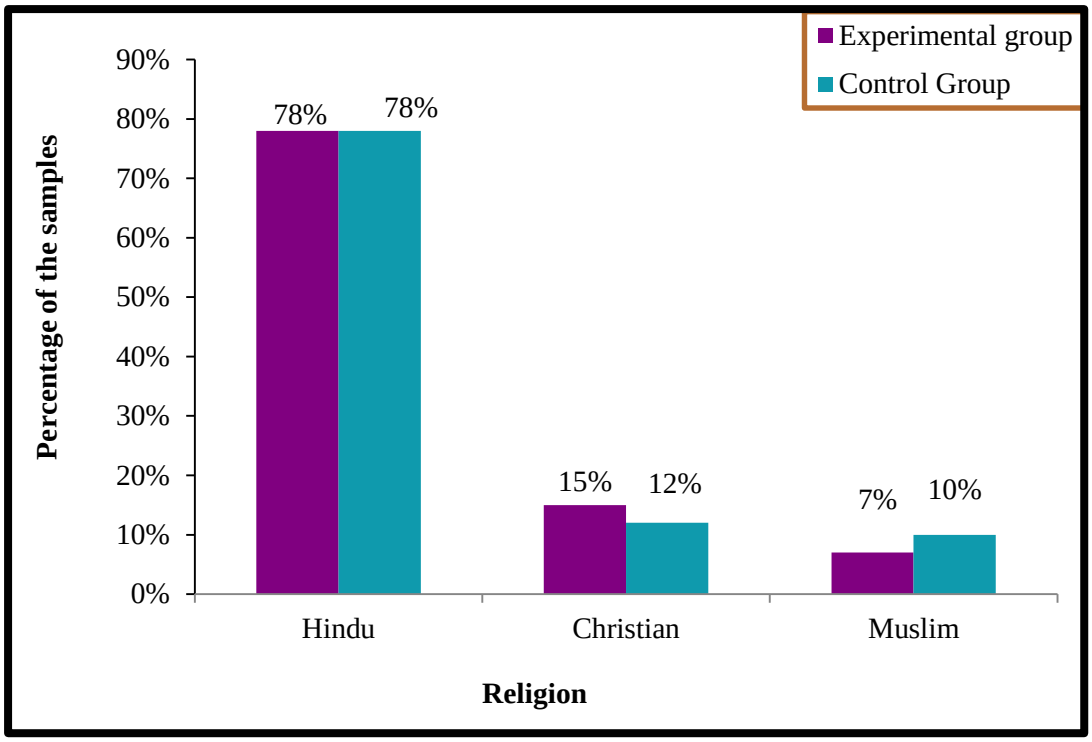

Figure 4.1.3 Percentage distribution of samples according to their Religion in Experimental and Control group

The data presented in the figure 4.1.3 reveals that, in experimental group majority 47 (78%) of the samples were Hindu whereas 9 (15%) children were Christian and least percentage 4 (7%) of children were Muslim.

In control group, majority 47 (78%) of the samples were Hindu whereas 7 (12%) children were Christian and least percentage 6 (10%) of children were Muslim.

Most of the samples were Hindus in both the groups.

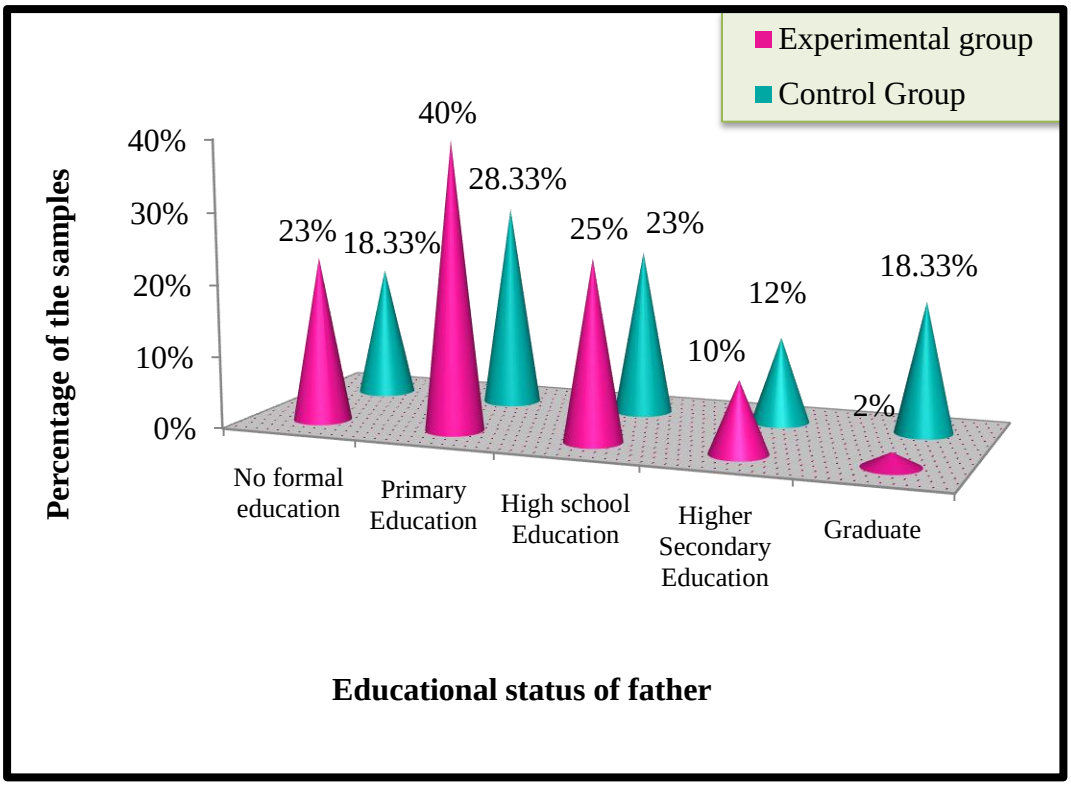

Figure 4.1.4 Percentage distribution of samples according to their Educational status of Father in Experimental and Control group

The above figure 4.1.4 depicts that, in experimental group nearly half 24 (40%) of the children's father had primary education whereas 14 (23%) children's father had no formal education, 15 (25%) children's father had high school education. However least percentage 6 (10%) of children's father had higher secondary school education and 1(2%) children's father were graduate.

In control group, 17 (28.33%) children's father had primary education whereas 14 (23%) children's father had high school education. Similar percentage of children's father had no formal education11 (18.33%) and graduate 11(18.33%). Least percentage 7 (12%) of children's father had higher secondary school education.

Highest percentage of the children's father had primary education in both the groups.

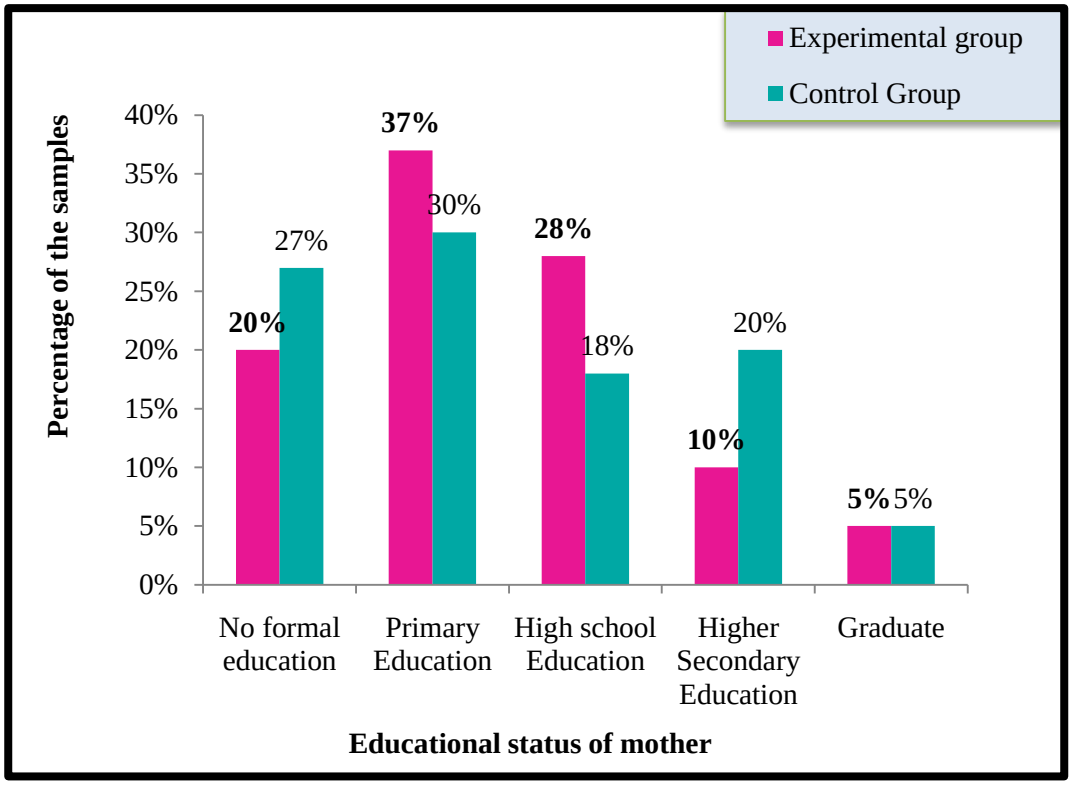

Figure 4.1.5 Percentage distribution of samples according to their Educational status of Mother in Experimental and Control group

The above figure 4.1.5 depicts that, in experimental group nearly half 22 (37%) of the children's mother had primary education whereas 17 (28%) children's mother had high school education and 12 (20%) mother had no formal education. However the least percentage 6 (10%) of children's mother had higher secondary school education and 3 (5%) were graduate.

In control group, 18 (30%) children's mother had primary education whereas 16 (27%) children's mothers had no formal education, 12 (20%) children's mother had higher secondary school education and 11 (18 %) children's mother had high school education. However the least percentage 3(5%) were graduate.

Around one third of the children's mother had primary education in both the groups.

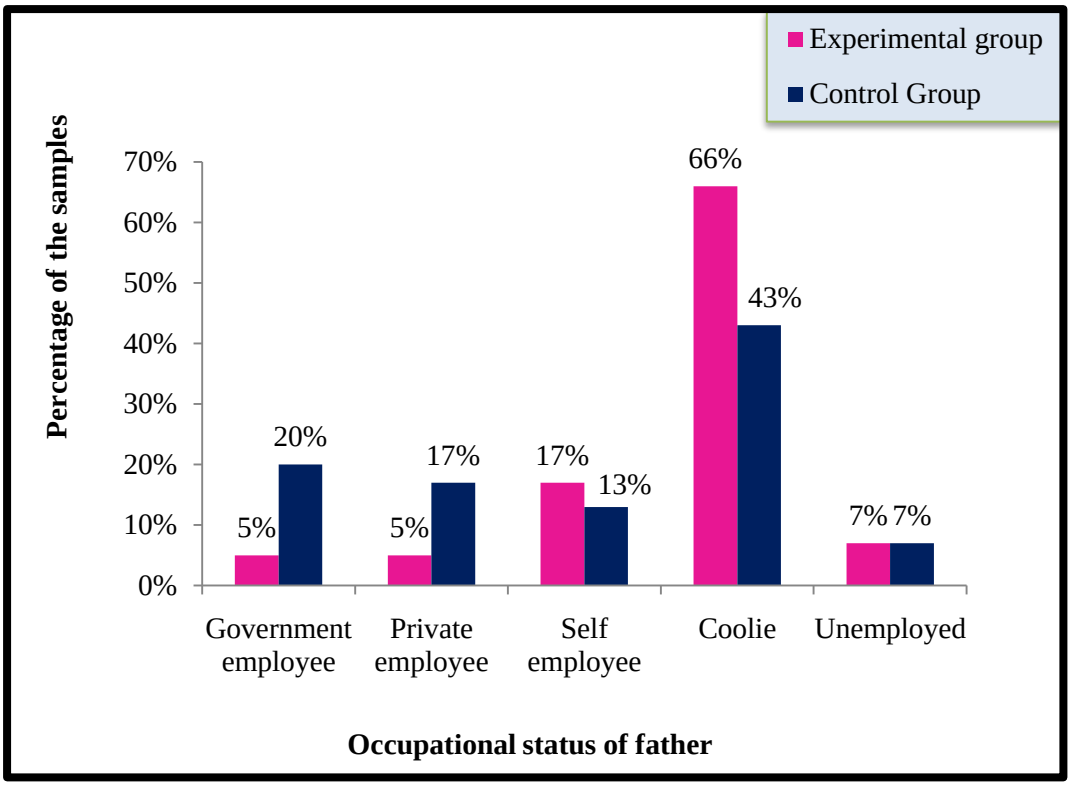

Figure 4.1.6 Percentage distribution of samples according to their Occupational status of Father in Experimental and Control group

The above figure 4.1.6 represents that, in experimental group majority 40 (66%) of the children's father were coolie whereas 10 (17%) children's father were self employee. More or less similar percentage children's father were unemployed 4(7%) whereas government 3 (5%) and private employee 3 (5%).

In control group, nearly half 26 (43%) of the children's father were coolie whereas 12 (20%) children's father were government employee, 10(17%) children's father were private employee and 8 (13%) children's father were self employee. However the least percentage 4(7%) children's father were unemployed.

In both the groups, highest percentages of children's father were coolie workers.

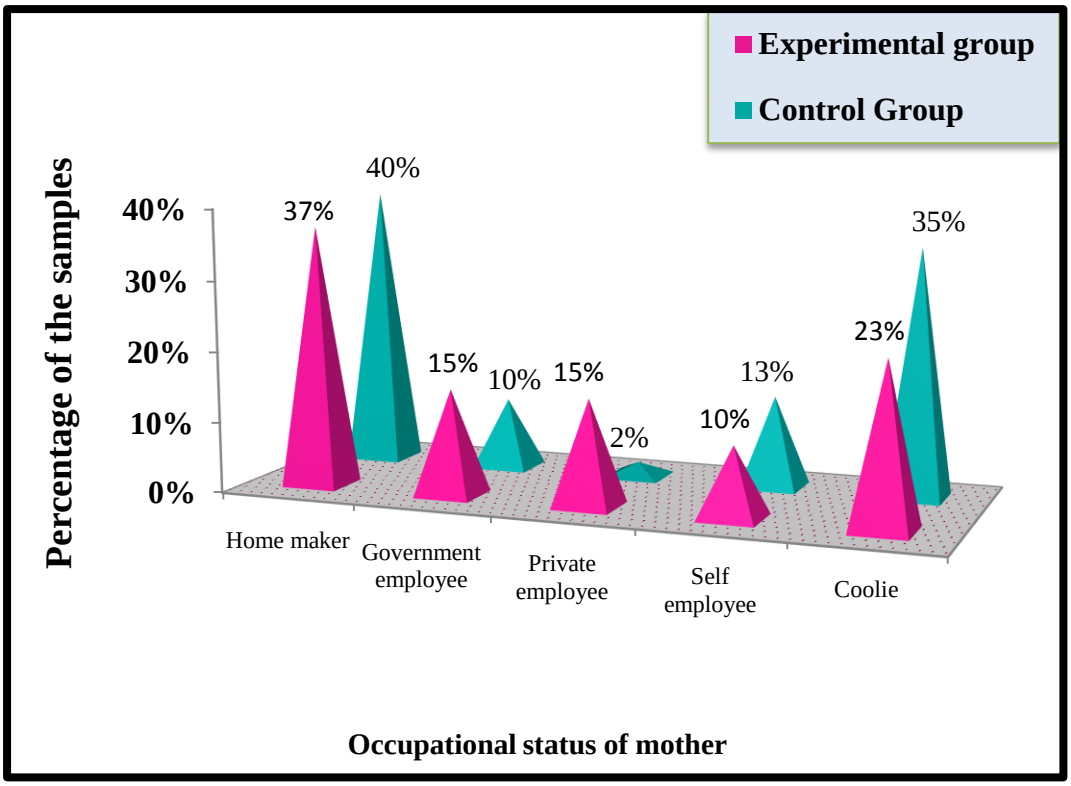

Figure 4.1.7 Percentage distribution of samples according to their Occupational status of Mother in Experimental and Control group

The above figure 4.1.7 reveals that, in experimental group nearly half 22 (37%) of the children's mother were home maker whereas 14 (23%) mother were coolie. Similar percentage of the children's mother were government employee 9 (15%) and private employee 9 (15%). However least percentage 6(10%) of them were self employee.

In control group highest percentage 24 (40%) of the children's mother were home maker whereas 21 (35%) children's mother were coolie, 8 (13%) of them were self employee. However least percentage of children's mother were private employee 6 (10%) and government employee 1(2%).

In both the groups highest percentage of the children's mother were home maker and coolie workers.

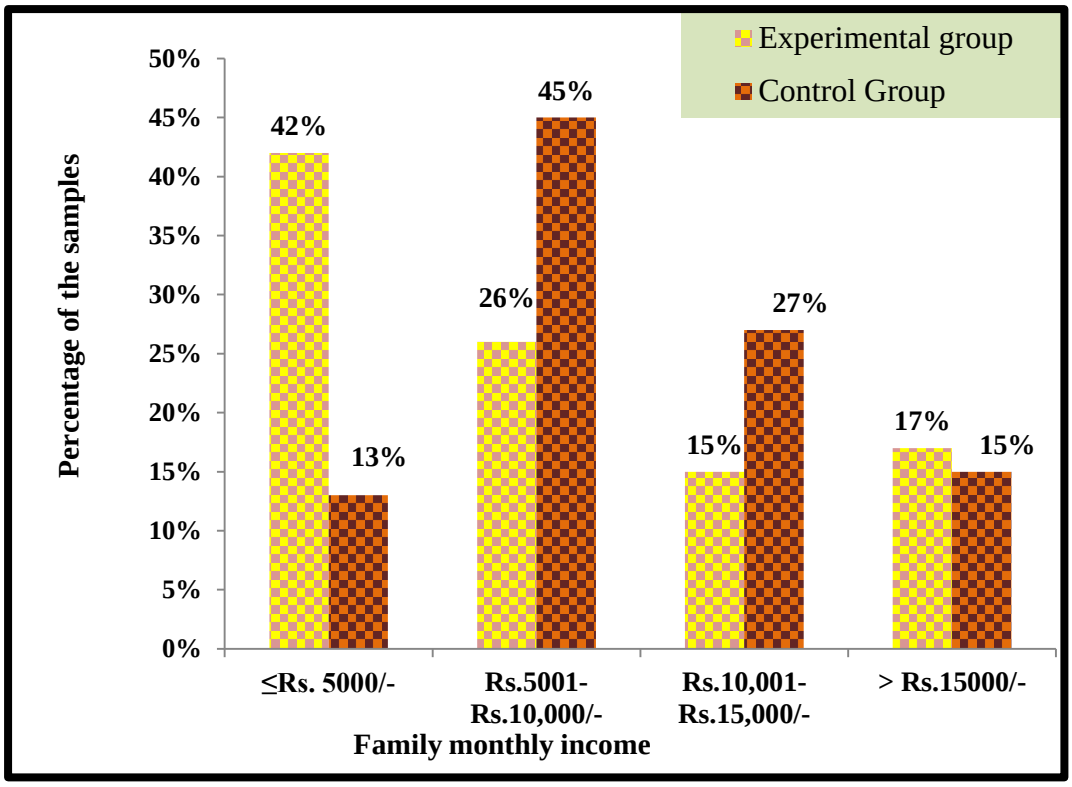

Figure 4.1.8 Percentage distribution of samples according to their Family Monthly Income in Experimental and Control group

The above figure 4.1.8 depicts that, in experimental group nearly half 25(42%) of the children's family monthly income was ≤ Rs.5000/- whereas 16(26%) of the children's family monthly income was between Rs.5001and-Rs.10,000/- and 10 (17%) of the children's family monthly income was >Rs.15,000/- . However least percentage 9 (15%) of the children's family monthly income Rs.10,001/- to Rs.15,000/- .

In control group, nearly half 27 (45%) of the children's family monthly income was between Rs.5001/- to Rs.10,000/- whereas 16 (27%) of the children's family monthly income was between Rs.10,001/- to Rs.15,000/- and 9 (15%) of the children's family monthly income was > Rs.15,000/- However least percentage 8 (13%) of children's family monthly income was ≤Rs.5000/-.

In experimental group highest percentage of the sample's family monthly income was ≤ Rs.5,000/-. In control group highest percentage of the sample's family income was between Rs.5,001/- to Rs. 10,000/-.

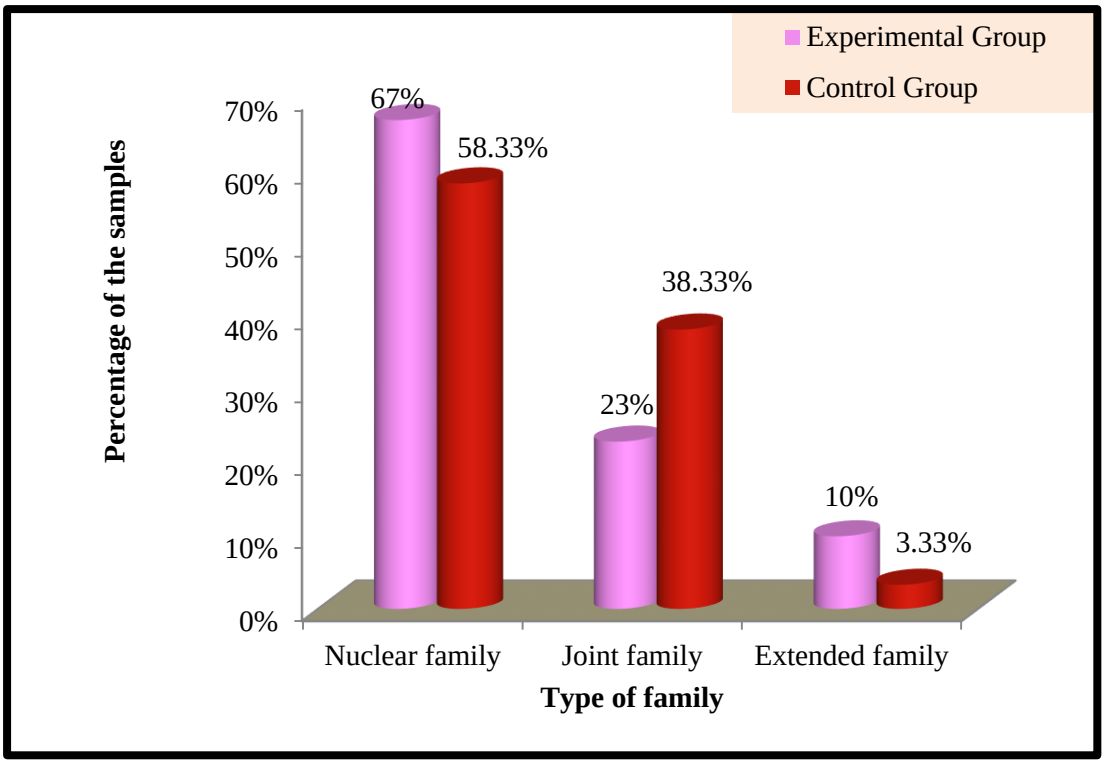

Figure 4.1.9 Percentage distribution of samples according to their Type of Family in Experimental and Control group

The above figure 4.1.9 represents that, in experimental group majority 40(67%) of the samples were belongs to nuclear family whereas 14 (23%) samples were belongs to joint family and least percentage 6 (10%) of the samples were from extended family.

In control group, more than half 35 (58.33%) of the samples were belongs to nuclear family whereas 23 (38.33%) samples were belongs to joint family however least percentage 2 (3.33%) of samples were from extended family.

In both the groups highest percentage of the children's family were belongs to nuclear family.

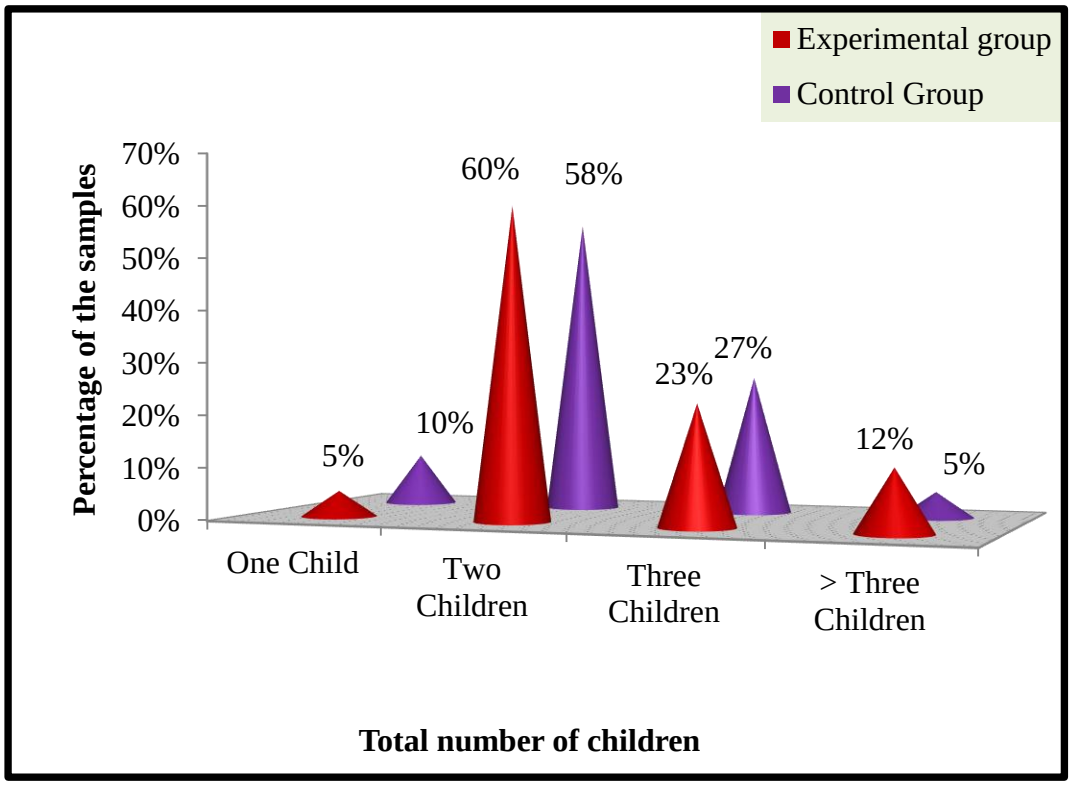

Figure 4.1.10 Percentage distribution of samples according to their total number of children in the family in Experimental and Control group

The above figure 4.1.10 represents that, in experimental group more than half 36 (60%) of the sample's family had two children whereas 14 (23%) sample's family had three children and 7 (12%) sample's family had more than three children. However least percentage 3 (5%) of the sample's family had only one child.

In control group, more than half 35 (58%) of the sample's family had two children whereas 16 (27%) sample's family had three children, 6 (10%) sample's family had one child and least percentage 3 (5%) of the sample's family had more than three children.

In both the groups more or less similar percentage of the children's family had two children.

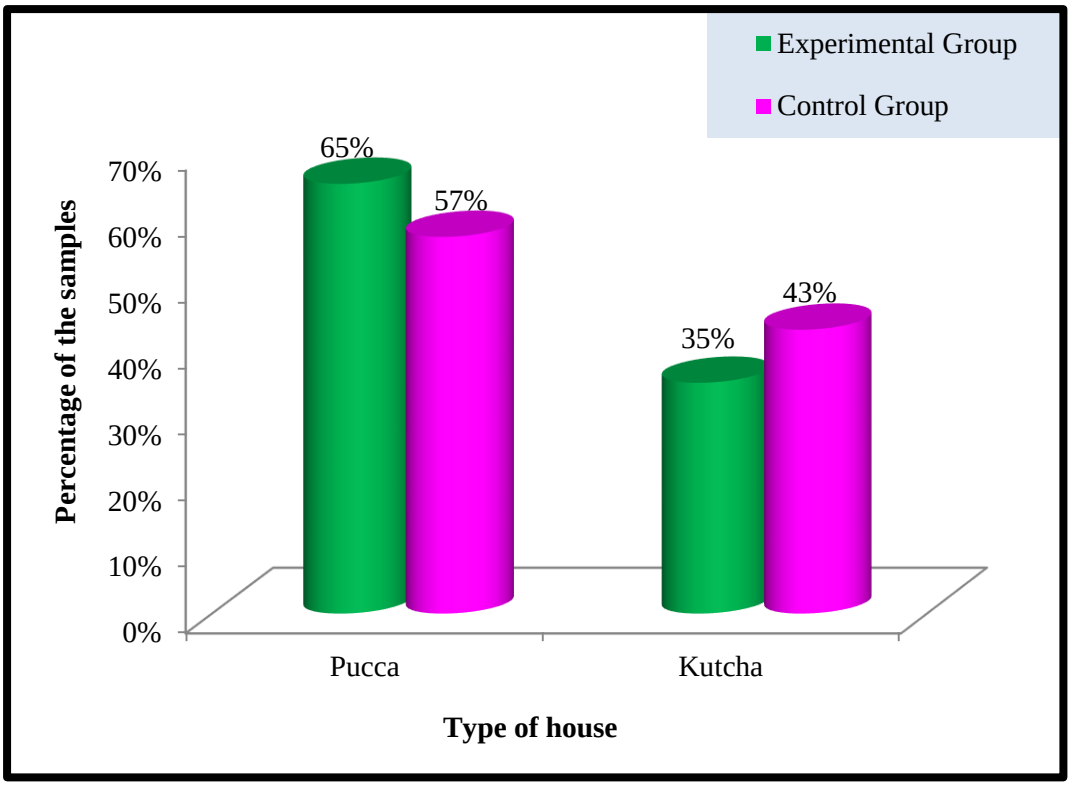

Figure 4.1.11 Percentage distribution of samples according to their Type of house in Experimental and Control group

The above figure 4.1.11 shows that, in experimental group majority 39 (65%) of the samples were living in pucca house and 21 (35%) were living in kutcha house.

In control group, more than half 34 (57%) of the samples were living in pucca house and 26 (43%) were living in kutcha house.

In both the groups highest percentage of the sample's family were living in pucca house.

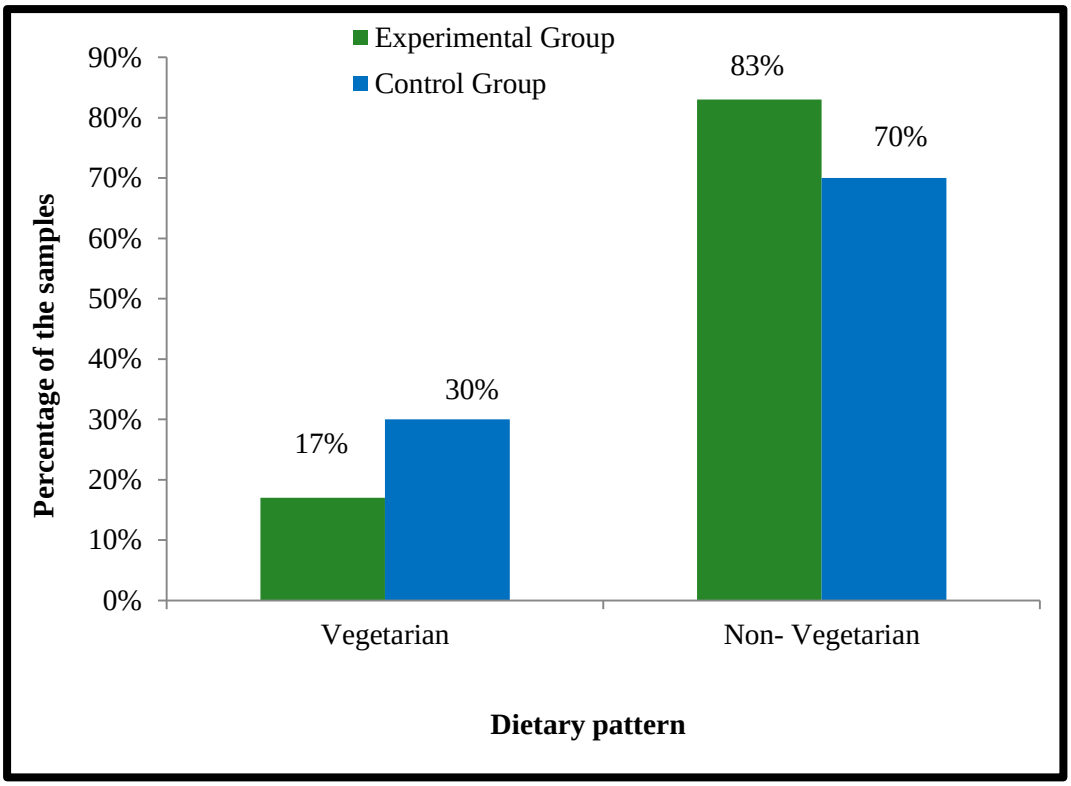

Figure 4.1.12 Percentage distribution of samples according to their Dietary Pattern in Experimental and Control group

The above figure 4.1.12 represents that, in experimental group majority 50 (83%) of the samples were non- vegetarian whereas 10 (17%) samples were vegetarian.

In control group majority 42 (70%) of the samples were non- vegetarian and 18 (30%) samples were vegetarian.

In both the groups highest percentage of the sample's family were belongs to non- vegetarian.

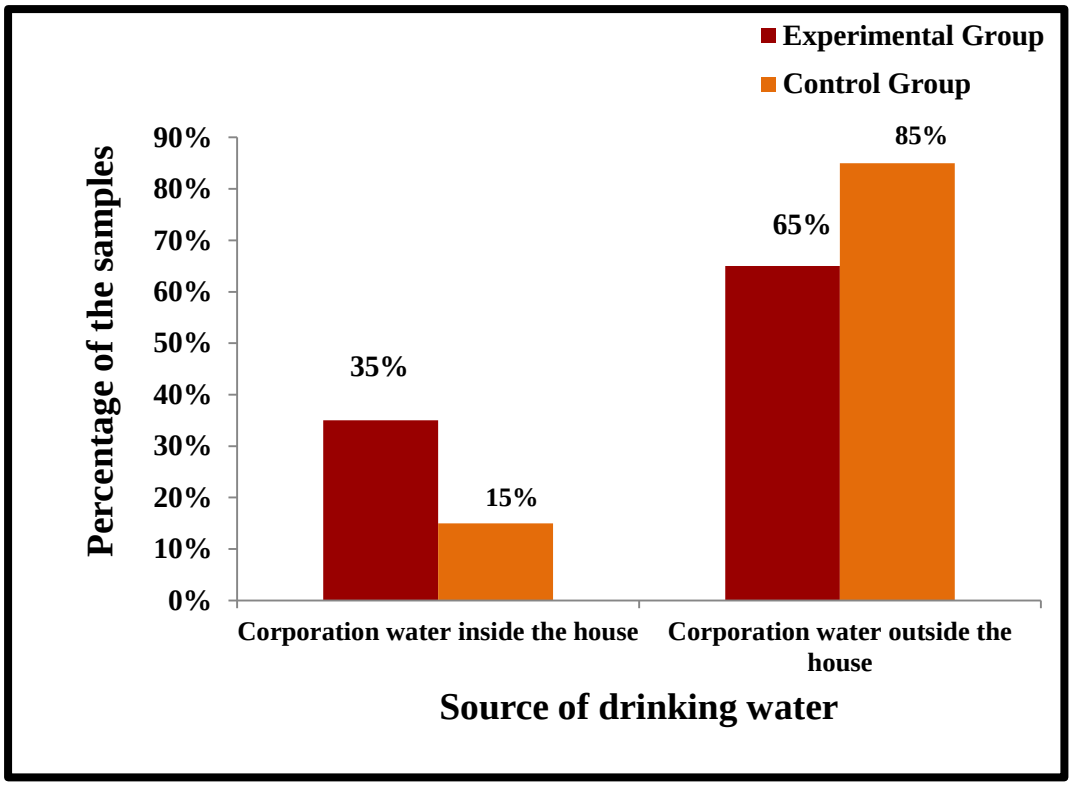

Figure 4.1.13 Percentage distribution of samples according to their source of drinking water in Experimental and Control group

The above figure 4.1.13 displays that, in experimental group highest percentage 39 (65%) of the samples were having drinking water facility from outside the house whereas one third 21 (35%) of the samples were having drinking water facility from inside the house.

In control group majority 51 (85%) of the samples were having drinking water facility from outside the house. However least percentage 9 (15%) samples were having drinking water facility from inside the house.

In both the groups highest percentage of the sample's family having drinking water facility from outside the house.

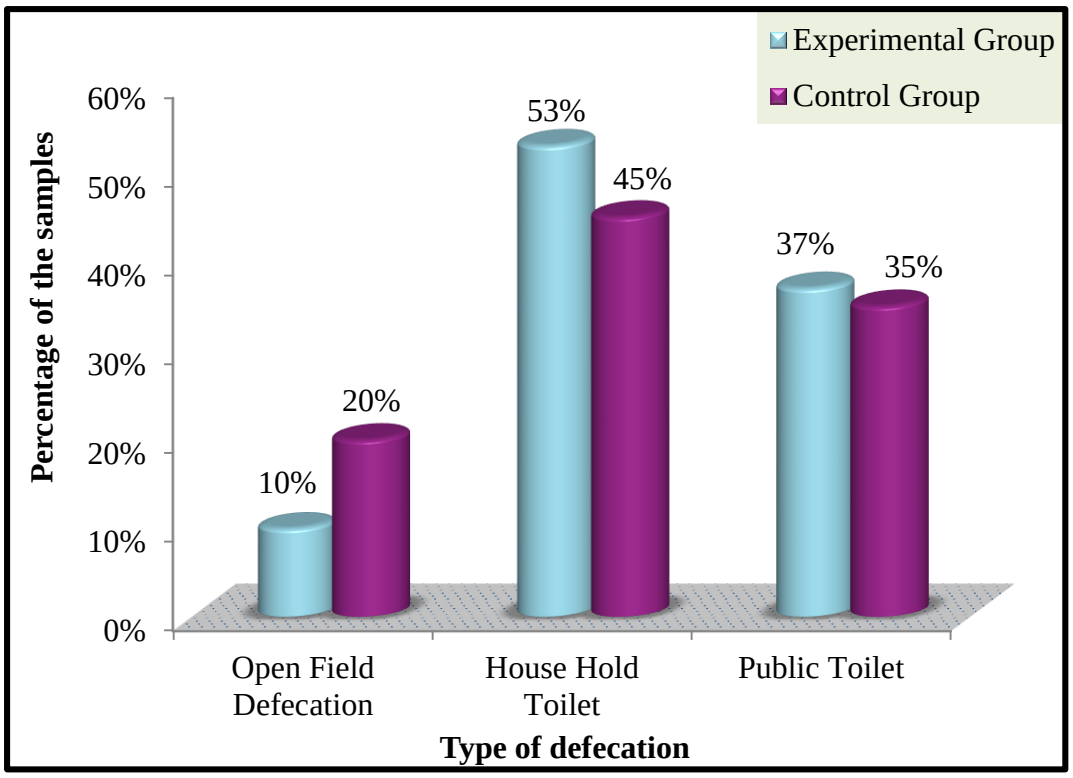

Figure 4.1.14 Percentage distribution of samples according to their Type of Defecation in Experimental and Control group

The above figure 4.1.14 depicts that, in experimental group more than half 32 (53%) of the samples were using household toilet whereas one third 22 (37%) of the samples were using public toilet. However least percentage 6 (10%) of the samples were practicing open field defecation.

In control group, nearly half 27 (45%) of the samples were using household toilet, 21 (35%) samples were using public toilet and 12 (20%) samples were practicing open field defecation.

Nearly one third of the samples were using public toilet in both the groups.

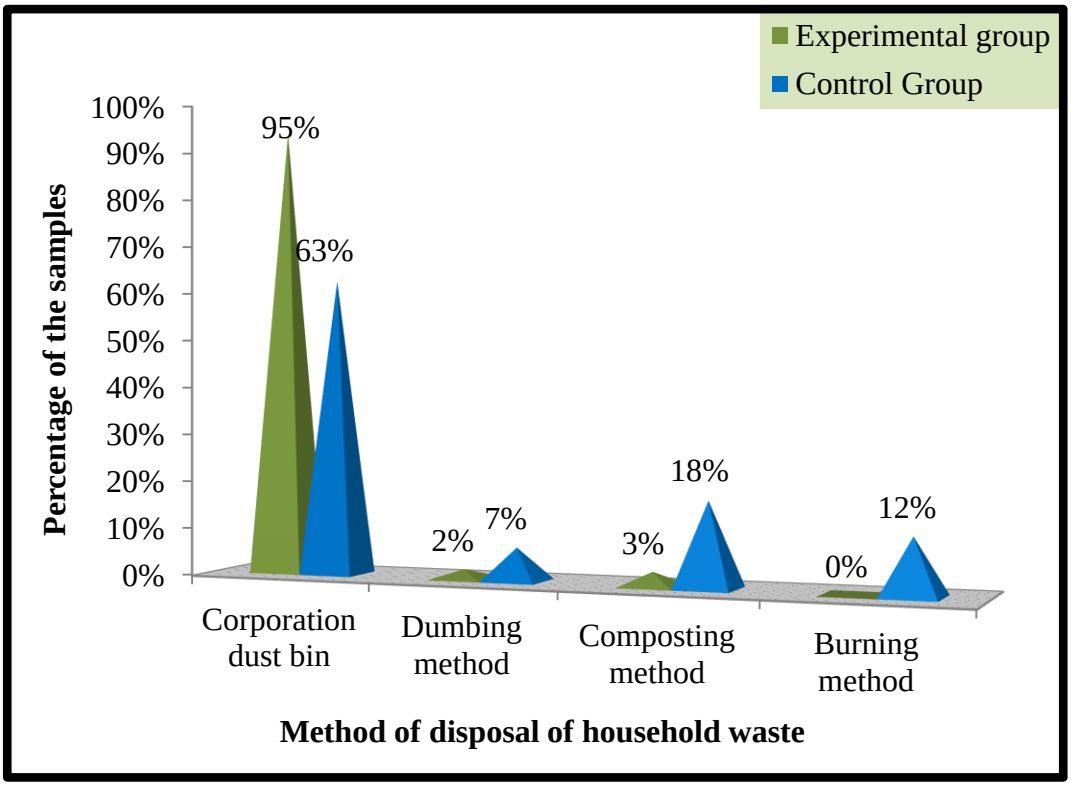

Figure 4.1.15 Percentage distribution of samples according to their Method of disposal of Household waste in Experimental and Control group

The above figure 4.1.15 reveals that, in experimental group majority 57 (95%) of the samples were using corporation dust bin for disposal of household waste. Least percentage samples were using composting method 2(3%) and dumping method 1 (2%). However none (0%) of them were burning household waste.

In control group, more than half 38 (63%) of the samples were using corporation dust bin for disposal of household waste whereas 11(18%) samples were using composting method and 7 (12%) were burning the household waste. However least percentage 4 (7%) of the samples were using dumping method for disposal of waste.

All most all the samples were using corporation dust bin for disposal of household waste.

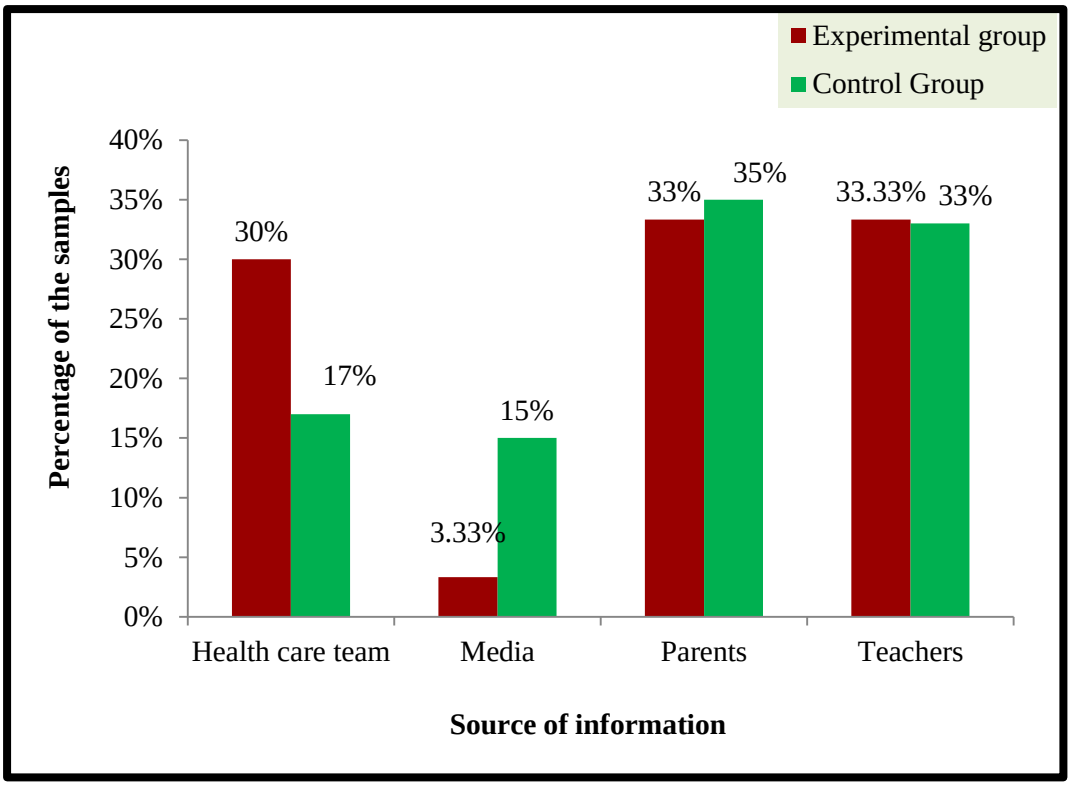

Figure 4.1.17 Percentage distribution of samples according to their Source of Information in Experimental and Control group

The above figure 4.1.17 depicts that, in experimental group similar percentage 20 (33.33%) of samples were receiving information from parents and teachers whereas 18 (30%) samples were receiving information from health care team and least percentage 2 (3.33%) of the samples were receiving information from media.

In control group, more or less similar percentage of the samples were receiving information from parents 21 (35%) and teachers 20 (33%) whereas 10 (17%) samples were receiving information from health care team and 9(15%) samples were receiving information from media regarding worm infestation.

Nearly one third of the samples were receiving information equally from parents and teachers in both the groups.

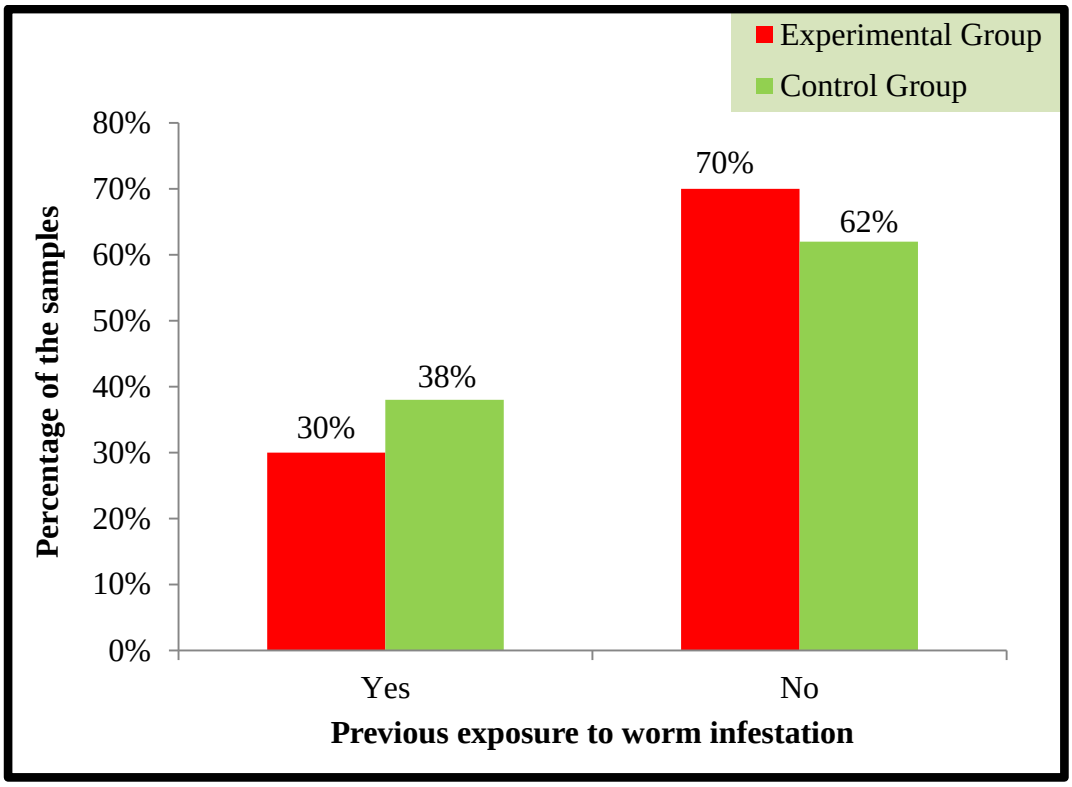

Figure 4.1.17 Percentage distribution of samples according to their Previous Exposure to Worm Infestation in Experimental and Control group

The above figure 4.1.17 represents that, in experimental group majority 42 (70%) of the samples had no previous exposure to worm infestation and 18 (30%) samples had previous exposure to worm infestation.

In control group, more than half 37 (62%) of the samples had no previous exposure to worm infestation and 23 (38%) samples had previous exposure to worm infestation.

Majority of the samples had no previous exposure to worm infestation in both the groups.

SECTION B

Assess the level of knowledge and level of knowledge on practice regarding prevention of worm infestations among the samples in experimental and control group

Table 4.2.1 Frequency and percentage distribution on level of knowledge regarding prevention of worm infestations among the samples in experimental and control group

n = 120

Level of knowledge regarding prevention of worm infestations	Experimental Group n=60				Control Group n=60			
	Pre-test		Post-test		Pre-test		Post-test	
	f	(%)	f	(%)	f	(%)	f	(%)
Adequate knowledge	0	0	37	62	0	0	0	0
Moderately Adequate knowledge	19	32	23	38	25	42	22	37
Inadequate knowledge	41	68	0	0	35	58	38	63
Total	60	100	60	100	60	100	60	100

The above table 4.2.1 represents that, among the experimental group in pre test most of the 41 (68%) children had inadequate knowledge whereas one third 19(32%) of the children had moderately adequate knowledge and none (0%) of them had adequate knowledge regarding prevention of worm infestations. In post-test most of the 37(62%) children had adequate knowledge where as 23(38%) children had moderately adequate knowledge and none (0%) of the children had inadequate knowledge regarding prevention of worm infestations.

Among control group, in pre-test most 35 (58%) of the children had inadequate knowledge whereas 25 (42%) children had moderately adequate knowledge and none (0%) of them had adequate knowledge regarding prevention of worm infestations. In post-test also most 38 (63%) of the children had inadequate knowledge whereas 22 (37%) children had moderately adequate knowledge and none (0%) of them had adequate knowledge regarding prevention of worm infestations.

In experimental group highest percentage of the children had adequate knowledge in post test whereas in pre test most of the children had inadequate knowledge regarding prevention of worm infestations.

Table 4.2.2 Frequency and percentage distribution on level of knowledge on practice regarding prevention of worm infestations among the samples in experimental and control group

n = 120

Level of knowledge on practice regarding prevention of worm infestations	Experimental Group n=60				Control Group n=60			
	Pre-test		Post-test		Pre-test		Post-test	
	f	(%)	f	(%)	f	(%)	f	(%)
Adequate knowledge on practice	0	0	51	85	4	7	3	5
Moderately Adequate knowledge on practice	56	93	9	15	55	92	55	92
Inadequate knowledge on practice	4	7	0	0	1	1	2	3
Total	60	100	60	100	60	100	60	100

The above table 4.2.2 depicts that among experimental group , in pre-test most 56 (93%) of the children had moderately adequate knowledge on practice, 4 (7%) children had inadequate knowledge on practice and none (0%) of the children had adequate knowledge on practice regarding prevention of worm infestations. In post-test most 51(85%) of the children had adequate knowledge on practice whereas 9(15%) children had moderately adequate knowledge on practice and none (0%) of the children had inadequate knowledge on practice regarding prevention of worm infestations.

Among control group, in pre-test most 55 (92%) of the children had moderately adequate knowledge on practice regarding whereas 4 (7%) children had adequate knowledge on practice and 1 (1%) had inadequate knowledge on

practice regarding prevention of worm infestations. In post-test also most 55 (92%) of the children had moderately adequate knowledge on practice whereas 3 (7%) children had adequate knowledge on practice and 2 (3%) had inadequate knowledge on practice regarding prevention of worm infestations.

In experimental group highest percentage of the children had adequate knowledge on practice in post test whereas in pre test most of the children had moderately adequate knowledge on practice regarding prevention of worm infestations. In control group most of the children had moderately adequate knowledge on practice regarding prevention of worm infestations in pre test and post test.

SECTION C

Comparison of Mean Pre-test and Post-test scores on level of knowledge and knowledge on practice regarding prevention of worm infestations among the samples in experimental and control group

Table 4.3.1 Mean, Standard Deviation, Mean Percentage and Mean difference in Pre and Post-test Scores among the samples in experimental and control group

n=120

Groups	Pre test			Post test			Mean difference
	Mean	SD	Mean %	Mean	SD	Mean %	
Experimental Group n=60	6.78	3.13	28.25	17.75	2.61	73.95	10.97
Control Group n=60	7.93	3.94	33.04	7.63	3.88	31.79	0.3

The above table 4.3 elicits the comparison of mean and standard deviation of pre and post test scores among experimental and control group. In Pre-test, the mean and standard deviation of level of knowledge regarding prevention of worm infestations was 6.78 ± 3.13 in experimental group whereas the mean percentage was 28.25% and 7.93 ± 3.94 in the control group whereas the mean percentage was 33.04%.

In Post-test, the mean and standard deviation of level of knowledge regarding prevention of worm infestations was 17.75 ± 2.61 in the experimental group, whereas the mean percentage was 73.95% and 7.63 ± 3.88 in the control group, whereas the mean percentage was 31.79%.

In experimental group the mean difference between the pre test and post test regarding prevention of worm infestations was 10.97 and in control group the mean difference between the pre test and post test regarding prevention of worm infestations was 0.3.

Table 4.3.2 Mean, Standard Deviation, Mean Percentage and Mean difference in Pre and Post-test Scores among the samples in experimental and control group

n=120

Groups	Pre test			Post test			Mean difference
	Mean	SD	Mean%	Mean	SD	Mean%	
Experimental Group n=60	7.11	1	47.4	12.13	1.48	80.86	5.02
Control Group n=60	8.61	1.42	57.4	8.21	1.49	54.73	0.4

The above table 4.3.1 elicits the comparison of mean and standard deviation of pre and post test scores among experimental and control group. In Pre-test, the mean and standard deviation of level of knowledge on practice regarding prevention of worm infestations was 7.11 ± 1 in experimental group, whereas the mean percentage was 47.4% and 8.61 ± 1.42 in the control group whereas the mean percentage was 57.4%. In Post-test, the mean and standard deviation of level of knowledge on practice regarding prevention of worm infestations was 12.13 ± 1.48 in the experimental group, whereas the mean percentage was 80.86% and 8.21 ± 1.49 in the control group, whereas the mean percentage was 54.73%.

The mean difference between pre test and post test level of knowledge on practice regarding prevention of worm infestations was 5.02 and 0.4 in experimental and control group respectively.

SECTION D

Effectiveness of Snake and ladder game on level of knowledge and knowledge on practice regarding prevention of worm infestations among samples

Table 4.4.1 Paired 't' test value of pre and post-test score on level of knowledge regarding prevention of worm infestations among samples in experimental group

n=60

Experimental group		Mean	SD	Paired 't' Value	df
Level of knowledge regarding prevention of worm infestations	Pre-test	6.78	3.13	**19.84	59
	Post-test	17.75	2.61		

Table value = 2.39 ****Highly Significant at p≤0.01**

The above table 4.4.1 portraits, the calculated paired't' test value of knowledge regarding prevention of worm infestation 19.84 was greater than the table value 2.39 at p≤0.01. It reveals that snake and ladder game on worm infestations was effective in gaining knowledge among samples. Hence, H_1 is retained.

Table 4.4.2 Paired 't' test value of pre and post-test score on level of knowledge on practice regarding prevention of worm infestations among samples in experimental group

n=60

Experimental group		**Mean**	**SD**	**Paired 't' Value**	**df**
Level of knowledge on practice regarding prevention of worm infestations	Pre-test	7.11	1	**20.46	59
	Post-test	12.13	1.48		

Table value = 2.39 ****Highly Significant at p≤0.01**

The above table 4.4.2 portraits, the calculated paired't' test value of knowledge on practice regarding prevention of worm infestation 20.46 was greater than the table value 2.39 at p≤0.01. It reveals that snake and ladder game on worm infestations was effective in gaining knowledge on practice among samples. Hence, H_2 is retained.

Table 4.4.3 Independent 't' test value of mean post-test score on level of knowledge regarding prevention of worm infestations among samples between experimental and control group

n=120

Groups	Post test		Independent 't' test value	df
	Mean	SD		
Experimental Group n=60	17.75	2.61	16.51	118
Control Group n=60	7.63	3.88		

Table value = 2.36 ****Highly Significant at p≤0.01**

The above table 4.4.3 reveals that, the calculated independent 't' test value of knowledge regarding prevention of worm infestation 16.51 was greater than the table value 2.36 at p≤0.01. Which shows that there is a significant difference between post test level of knowledge regarding prevention of worm infestation between experimental and control group. Hence, H_3 is retained.

Table 4.4.4 Independent 't' test value of mean post-test score on level of knowledge on practice regarding prevention of worm infestations among samples between experimental and control group

n=120

Groups	Post test		Independent 't' test value	df
	Mean	SD		
Experimental Group n=60	12.13	1.48	14.38	118
Control Group n=60	8.21	1.49		

Table value = 2.36 ****Highly Significant at p≤0.01**

The above table 4.4.4 reveals that, the calculated independent 't' test value of knowledge regarding prevention of worm infestation 14.38 was greater than the table value 2.36 at p≤0.01. It shows that there is significant difference between post test level of knowledge on practice regarding prevention of worm infestation between experimental and control group. Hence, H_4 is retained.

SECTION E

Correlation between level of knowledge and level of knowledge on practice regarding prevention of worm infestations among samples in experimental group

Table 4.5.1 Karl Pearson test value on level of knowledge and level of knowledge on practice regarding prevention of worm infestations among samples in experimental group

n=60

Experimental Group	Post test		Karl Pearson test 'r' value
	Mean	SD	
Level of knowledge regarding prevention of worm infestations	17.75	2.61	0.21
Level of knowledge on practice regarding prevention of worm infestations	12.13	1.49	

The above table 4.5.1 displays that, the calculated Karl Pearson 'r' value (r=0.21) of knowledge and knowledge on practice regarding prevention of worm infestation shows positive correlation among samples. Hence, H_5 is retained.

SECTION F

Association between the Level of knowledge and knowledge on practice among samples and their Selected Demographic Variables.

Table 4.6.1 Association between the level of knowledge regarding prevention of worm infestations among samples and their selected demographic variables in experimental and control group.

n=120

S. No	Demographic variables	Experimental group				Control group			
		Pre test		Post test		Pre test		Post test	
		df	χ^2	df	χ^2	df	χ^2	df	χ^2
1.	Age	2	0.34	2	3.74	2	0.4	2	1.04
2.	Sex	1	0.19	1	0.2	1	0.27	1	2.33
3.	Religion	2	2.61	1	2.4	2	***6.08**	2	***11.77**
4.	Educational status of father	4	1.48	4	2.43	4	4.58	4	3.06
5.	Educational status of mother	4	2.68	4	3.78	4	2.39	4	0.49
6.	Occupational status of father	4	5.12	4	***9.78**	4	5.96	4	3.76
7.	Occupational status of mother	4	3.72	4	6.25	4	3.7	4	***13.36**
8.	Family monthly income	3	4.88	3	3.53	3	4.21	3	0.68
9.	Type of family	2	0.72	2	1.02	2	1.8	2	1.19
10.	Total number of children in the family	3	4.02	3	3.88	3	5.83	3	4.04
11.	Type of house	1	0.12	1	2.69	1	2.21	1	3.63
12.	Dietary pattern	1	2.3	1	0.31	1	0.07	1	0.85

S. No	Demographic variables	Experimental group				Control group			
		Pre test		Post test		Pre test		Post test	
		df	χ^2	df	χ^2	df	χ^2	df	χ^2
13.	Source of drinking water	1	0.18	1	1.29	1	0.02	1	***4.07**
14.	Type of defecation	2	0	2	2.27	2	2.27	2	0.89
15.	Method of disposal of house hold waste	2	1.59	2	2.81	3	4	3	0.86
16.	Source of Information	3	0.78	3	4.05	3	0.4	3	4.67
17.	Previous exposure to worm infestation	1	0.15	1	2.87	1	0.71	1	1.78

***Significant at p ≤ 0.05**

The table 4.6.1 displays that, among the experimental group in post test with regard to level of knowledge regarding prevention of worm infestation there is a significant association found between level of knowledge and occupational status of father **(χ2=** 9.78). There is no significant association found between level of knowledge and other demographic variables such as age, sex, religion, educational status of father and mother, occupational status of mother, family monthly income, type of family, total number of children in the family, type of house, dietary pattern, source of drinking water, type of defecation, method of disposal of household waste, source of information and previous exposure to worm infestation. Hence, H6 is retained for the above mentioned demographic variable occupational status of father and rejected for other demographic variables of the children.

Among control group, in pre and post test there is a significant association found between level of knowledge and religion **($\chi 2$**=6.08, **$\chi 2$**=11.77 respectively), in post test there is a significant association found between level of knowledge and occupational status of mother **($\chi 2$=** 13.36), source of drinking water **($\chi 2$=** 4.07) and there is no significant association found between level of knowledge and other demographic variables of the children.

Hence, H6 is retained for the above mentioned demographic variables such as religion, occupational status of mother and source of drinking water and rejected for other demographic variables of the children regarding prevention of worm infestations.

Table 4.6.2 Association between the level of knowledge on practice regarding prevention of worm infestations among samples and their selected demographic variables in both experimental and control group.

n=120

S. No.	Demographic variables	Experimental group				Control group			
		Pre test		Post test		Pre test		Post test	
		df	χ^2	df	χ^2	df	χ^2	df	χ^2
1.	Age	2	0.83	2	2.89	4	2.42	4	1.97
2.	Sex	1	0	1	0.04	2	***6.96**	2	1.45
3.	Religion	2	4.16	2	0.83	4	1.36	4	2.17
4.	Educational status of father	4	3.53	4	3.1	8	3.27	8	4.61
5.	Educational status of mother	4	2.58	4	2.85	8	4.01	8	5.25
6.	Occupational status of father	4	***10.85**	4	5.23	8	2.15	8	6.47
7.	Occupational status of mother	4	2.44	4	5.02	8	10.35	8	5.51
8.	Family monthly income	3	0.99	3	0.36	6	3.89	6	6.24
9.	Type of family	2	3.38	2	1.23	4	***9.62**	4	***12.85**
10.	Total number of children in the family	3	***10.78**	3	0.59	6	1.54	6	2.15
11.	Type of house	1	2.3	1	0.69	2	1.85	2	4.93
12.	Dietary pattern	1	1.46	1	0.21	2	3.26	2	2.77
13.	Source of drinking water	1	0.17	1	1.95	2	0.47	2	2.9
14.	Type of defecation	2	4.98	2	1.42	4	6.51	4	4.42
15.	Method of disposal of household waste	2	0.08	2	2.1	6	***20.09**	6	7.07
16.	Source of Information	3	0.66	3	1.46	6	4.49	6	4.97
17.	Previous exposure to worm infestation	1	***4.12**	1	2.87	2	1.91	2	0.13

***Significant at $p \leq 0.05$**

The table 4.6.2 depicts that among experimental group, in pre test there is a significant association found between level of knowledge on practice and occupational status of father(χ^2= 10.85), total number of children in the family(χ^2=10.78) and previous exposure to worm infestation(χ^2= 4.12) except for the other demographic variables.

Hence, H7 is retained for the above mentioned demographic variables such as occupational status of father, total number of children in the family and previous exposure to worm infestation and rejected for other demographic variables of the children.

Among control group, in pre and post test there is a significant association found between level of knowledge on practice and type of family (χ^2= 9.62, χ^2=12.85 respectively). In pre test there is a significant association found between level of knowledge on practice and sex (χ^2= 6.96), method of disposal of household waste (χ^2= 20.09) except for the other demographic variables.

Hence, H7 is accepted for the above mentioned demographic variables such as sex, type of family and method of disposal of house hold waste and rejected for other demographic variables of the children on level of knowledge on practice regarding prevention of worm infestations.

SUMMARY

This chapter dealt with data analysis and interpretation in the form of statistical value based on the objectives. Descriptive statistics was used to analyze the selected demographic variables in both experimental and control group. Paired‘t’ test was used to evaluate the effectiveness of snake and ladder game on worm infestations on level of knowledge and level of knowledge on practice regarding prevention of worm infestations in experimental group. Independent‘t’ test was used to compare the post test level of knowledge and level of knowledge on practice regarding prevention of worm infestations in both experimental and control group. Karl Pearson method was used to find out the co-relation between level of knowledge and level of knowledge on practice regarding prevention of worm infestations in experimental group. Chi square test was used to find out the association between the pre and post-test level of knowledge and level of knowledge on practice regarding prevention of worm infestations among primary school children and their selected demographic variables in both experimental and control group.

CHAPTER V

DISCUSSION

This study was done to evaluate the Effectiveness of Snake and ladder game on level of knowledge and level of knowledge on practice regarding prevention of worm infestations among primary school children at selected corporation schools, Coimbatore. The discussion of the present study was based on the findings obtained from statistical analysis of collected data.

Distribution of samples according to their demographic variables.

- According to the demographic variables in experimental group among 60 samples nearly half 25 (42%) of the samples were in the age group of 10 years, around half 31 (52%) of the total number of the children were male and 29 (48%) were female and majority 47 (78%) of the samples were Hindu.

- Nearly half 24 (40%) of the children's father had primary education, least percentage of children's father had higher secondary school education 6 (10%) and children's father were graduate1 (2%), one third 22 (37%) of the children's mother had primary education whereas the least percentage of children's mother had higher secondary school education6 (10%) and 3 (5%) were graduate.

- Majority 40 (66%) of the children's father were coolie whereas More or less similar percentage children's father were unemployed 4(7%), government 3(5%) and private employee 3 (5%). One third 22 (37%) of the children's mother were home maker whereas 14 (23%) mother were coolie. However least percentage 6(10%) of them were self employee.

- Nearly half 25(42%) of the children's family monthly income was ≤Rs.5000/- , least percentage 9 (15%) of the children's family monthly income Rs.10, 001/- to Rs.15, 000/-, majority 40(67%) of the samples were belongs to nuclear family and least percentage 6 (10%) of the

samples were from extended family, more than half 36 (60%) of the sample's family had two children whereas least percentage 3 (5%) of the sample's family had only one child, majority 39(65%) of the samples were living in pucca house and 21 (35%) were living in kutcha house.

- Majority 50 (83%) of the samples were non- vegetarian whereas 10 (17%) samples were vegetarian, highest percentage 39(65%) were had drinking water facility from outside the house and 21(35%) of the samples were had drinking water facility from inside the house.

- More than half 32 (53%) of the samples were using household toilet whereas one third 22 (37%) of the samples were using public toilet. least percentage 6 (10%) of the samples were practicing open field defecation, majority 57 (95%) of the samples were using corporation dust bin for disposal of household waste. Least percentage samples were using composting method 2(3%) and dumping method 1 (2%).

- Similar percentage 20 (33.33%) of samples were receiving information from parents and teachers whereas 18 (30%) samples were receiving information from health care team and least percentage 2 (3.33%) of the samples were receiving information from media, majority 42 (70%) of the samples had no previous exposure to worm infestation and 18 (30%) samples had previous exposure to worm infestation.

- In control group among 60 samples, more than half 36 (60%) of the samples were in 10 years of age, highest number of the children 36 (60%) were female and 24 (40%) children were male, majority 47 (78%) of the samples were Hindu whereas least percentage 6 (10%) of children were Muslim.

- Most 17 (28.33%) of the children's father had primary education whereas Least percentage 7 (12%) of children's father had higher secondary school education, 18 (30%) children's mother had primary education whereas 16 (27%) children's mother were no formal education. However the least percentage 3(5%) were graduate.

- Nearly half 26 (43%) of the children's father were coolie whereas the least percentage 4 (7%) children's father were unemployed, highest percentage 24 (40%) of the children's mother were home maker whereas 21 (35%) children's mother were coolie. However least percentage of children's mother were private employee 6(10%) and government employee 1(2%).

- Nearly half 27 (45%) of the children's family monthly income was between Rs.5001/- to Rs.10, 000/- whereas least percentage 8 (13%) of children's family monthly income was ≤ Rs.5000/, more than half 35 (58.33%) of the samples were belongs to nuclear family whereas least percentage 2 (3.33%) of samples were from extended family.

- More than half 35 (58%) of the sample's family had two children and least percentage 3 (5%) of the sample's family had more than three children, more than half 34 (57%) of the samples were living in pucca house and 26 (43%) were living in kutcha house.

- Majority 42 (70%) of the samples were non- vegetarian, 18 (30%) samples were vegetarian, majority 51 (85%) of the samples were had drinking water facility from outside the house and least percentage 9(15%) samples were had drinking water facility from inside the house.

- Nearly half 27 (45%) of the samples were using household toilet, 21 (35%) samples were using public toilet and 12 (20%) samples were practicing open field defecation, more than half 38 (63%) of the samples were using corporation dust bin for disposal of household waste whereas .However least percentage 4 (7%) of the samples were using dumping method for disposal of waste.

- More or less similar percentage of the samples were receiving information from parents 21 (35%) and teachers 20 (33%) whereas 10 (17%) samples were receiving information from health care team and 9(15%) samples were receiving information from media regarding worm infestation, more than half 37 (62%) of the samples had no previous exposure to worm infestation and 23(38%) samples had previous exposure to worm infestation.

❖ **The first objective was to assess the level of knowledge regarding prevention of worm infestations among primary school children in experimental and control group.**

- Among the experimental group in pre test most of the 41 (68%) children had inadequate knowledge whereas one third 19(32%) of the children had moderately adequate knowledge and none (0%) of them had adequate knowledge regarding prevention of worm infestations. In post-test most of the 37(62%) children had adequate knowledge where as 23(38%) children had moderately adequate knowledge and none (0%) of the children had inadequate knowledge regarding prevention of worm infestations.
- Among control group, in pre-test most 35 (58%) of the children had inadequate knowledge whereas 25 (42%) children had moderately adequate knowledge and none (0%) of them had adequate knowledge regarding prevention of worm infestations. In post-test also most 38 (63%) of the children had inadequate knowledge whereas 22 (37%) children had moderately adequate knowledge and none (0%) of them had adequate knowledge regarding prevention of worm infestations.

❖ **The second objective was to assess the level of knowledge on practice regarding prevention of worm infestations among primary school children in experimental and control group.**

- Among experimental group , in pre-test most 56 (93%) of the children had moderately adequate knowledge on practice, 4(7%) children had inadequate knowledge on practice and none (0%) of the children had adequate knowledge on practice regarding prevention of worm infestations. In post-test most 51(85%) of the children had adequate knowledge on practice whereas 9(15%) children had moderately adequate knowledge on practice and none (0%) of the children had inadequate knowledge on practice regarding prevention of worm infestations.
- Among control group, in pre-test most 55 (92%) of the children had moderately adequate knowledge on practice regarding whereas 4 (7%)

children had adequate knowledge on practice and 1 (1%) had inadequate knowledge on practice regarding prevention of worm infestations. In post-test also most 55 (92%) of the children had moderately adequate knowledge on practice whereas 3 (7%) children had adequate knowledge on practice and 2 (3%) had inadequate knowledge on practice regarding prevention of worm infestations.

- This study finding are consistent with the study conducted by **Dandagi SR, Moreshwar SA, Raddi SA (2013) t**o evaluate the effectiveness of structured teaching programme on knowledge regarding prevention of worm infestations among primary school children at selected government schools at Karnataka. The pre test knowledge of 21.75%, where as post test knowledge was 64% and the gain in knowledge was 42.25% after the administration of structured teaching programme. The findings on pre-test assessment of knowledge regarding prevention of worm infestations showed that 50 (41.66%) children had average knowledge and 70 (58.33%) had poor knowledge. After the administration of planned teaching programme, the pre-test and post-test data analysis revealed that the mean post-test score (30.85±4.08) was higher than the mean pre test score (8.78±3.8).

❖ **The third objective was to evaluate the effectiveness of snake and ladder game on level of knowledge and level of knowledge on practice regarding prevention of worm infestations among primary school children.**

- In experimental group, overall score on level of knowledge among primary school children in mean pre-test and post-test scores revealed that, was 6.78 ± 3.13 in experimental group whereas the mean percentage was 28.25% and 7.93 ± 3.94 in the control group whereas the mean percentage was 33.04%. The calculated paired ‘t’ test value of knowledge regarding prevention of worm infestation 19.84 was greater than the table value 2.39 at $p \leq 0.01$. It reveals that snake and ladder game on worm infestations was effective in gaining knowledge among samples. Hence, H_1 was retained.

- In Post-test, the mean and standard deviation of level of knowledge regarding prevention of worm infestations was 17.75 ± 2.61 in the experimental group, whereas the mean percentage was 73.95% and 7.63 ± 3.88 in the control group, whereas the mean percentage was 31.79%. The mean difference on level of knowledge was 10.97 and 0.3 in experimental and control group respectively.
- In experimental group, overall score on level of knowledge on practice among primary school children in mean pre-test and post-test scores revealed that, was 7.11± 1 in experimental group whereas the mean percentage was 47.4% and 8.61±1.42 in the control group whereas the mean percentage was 57.4%. In Post-test, the mean and SD of level of knowledge on practice regarding prevention of worm infestations was 12.13 ± 1.48 in the experimental group whereas the mean percentage was 80.86% and 8.21 ± 1.49 in the control group whereas the mean percentage was 54.73%. The mean difference between pre test and post test level of knowledge on practice regarding prevention of worm infestations was 5.02 and 0.4 in experimental and control group respectively.
- The calculated paired 't' test value of knowledge on practice regarding worm infestation 20.46 was greater than the table value 2.39 at $p \leq 0.01$. It reveals that snake and ladder game on worm infestations was effective in gaining knowledge on practice among samples. Hence, H_2 was retained.
- The calculated independent 't' test value of knowledge regarding prevention of worm infestation 16.51 was greater than the table value 2.36 at $p \leq 0.01$. Which shows that there is a significant difference between post test level of knowledge regarding prevention of worm infestation between experimental and control group. Hence, H_3 was retained.
- The calculated independent 't' test value of knowledge regarding prevention of worm infestation 14.38 was greater than the table value 2.36 at $p \leq 0.01$. It shows that there is significant difference between post test level of knowledge on practice regarding prevention of worm infestation between experimental and control group. Hence, H_4 was retained.

- The study findings are consistent with the study conducted by **Tinu jose (2009)** conducted an experimental study to determine the effectiveness of snake and ladder game on knowledge of common ailments among 60 primary school children of Assumption English School, Bangalore. A pre-test and post-test was done and among them 75.3% had a good knowledge and 24.7% had moderate knowledge on common ailments. The post-test score was more than the pre-test score by 5%. The findings showed that the post-test knowledge scores were higher than the pre-test knowledge scores and the differences between the pre-test and post-test scores was statistically significant at 5% level ('$t'_{(59)} = 19.16$, $p<0.05$). This indicated that the game was an effective method of imparting information to the children.

❖ **The fourth objective was to find out the correlation between level of knowledge and level of knowledge on practice regarding prevention of worm infestations among primary school children in experimental group.**

- The calculated Karl Pearson 'r' value (r=0.21) of knowledge and knowledge on practice regarding prevention of worm infestation shows positive correlation among samples. Hence, H_5 was retained.
- The study findings are consistent with the study conducted by **Swarajyam Y (2010)** to assess the Knowledge and Practices of Mothers Regarding Worm Infestation among School age Children (6-12 Years) in order to develop Health Education Pamphlet in a Selected Rural Community, Bangalore. In this study 100 mothers of school age children were selected by simple random sampling technique. After the intervention majority of the mothers had moderately adequate knowledge (65%) and moderate practices (72%) regarding worm infestations. There was a positive correlation (r = 0.482) between knowledge and practices of mothers regarding worm infestations. There was statistically significant association found between level of knowledge and demographic variables

such as age, education and monthly income of the family. There was statistically significant association found between level of practices and demographic variables such as education and occupation.

- **The fifth objective was to find out the association between level of knowledge and level of knowledge on practice regarding prevention of worm infestations among primary school children and their selected demographic variables in experimental and control group.**

- Among the experimental group in post test with regard to level of knowledge regarding prevention of worm infestation there was significant association found between level of knowledge and occupational status of father(χ^2=9.78). There was no significant association found between level of knowledge and other demographic variables such as age, sex, religion, educational status of father and mother, occupational status of mother, family monthly income, type of family, total number of children in the family, type of house, dietary pattern, source of drinking water, type of defecation, method of disposal of household waste, source of information and previous exposure to worm infestation. Hence, H6 was retained for the above mentioned demographic variable occupational status of father and rejected for other demographic variables of the children.
- Among control group, in pre and post test there was significant association found between level of knowledge and religion(χ^2=6.08, χ^2=11.77 respectively), in post test there was significant association found between level of knowledge and occupational status of mother (χ^2= 13.36), source of drinking water (χ^2= 4.07) and other demographic variables are not associated at $p \leq 0.05$. Hence, H6 was retained for the above mentioned demographic variables such as religion, occupational status of mother and source of drinking water and rejected for other demographic variables of the children regarding prevention of worm infestations.

- Among experimental group, in pre test there was significant association found between level of knowledge on practice and occupational status of father (χ^2=10.85), total number of children in the family (χ^2=10.78) and previous exposure to worm infestation (χ^2= 4.12) except for the other demographic variables. Hence, H7 was retained for the above mentioned demographic variables such as occupational status of father, total number of children in the family and previous exposure to worm infestation and rejected for other demographic variables of the children.

- Among control group, in pre and post test there was significant association found between level of knowledge on practice and type of family (χ^2= 9.62, χ^2=12.85 respectively). In pre test there was significant association found between level of knowledge on practice and sex (χ^2= 6.96), method of disposal of household waste (χ^2= 20.09) except for the other demographic variables. Hence, H7 was accepted for the above mentioned demographic variables such as sex, type of family and method of disposal of household waste and rejected for other demographic variables of the children on level of knowledge on practice regarding prevention of worm infestations.

SUMMARY

This chapter dealt with the discussion of the study with the reference to the Objectives and supportive studies. All the five objectives have been achieved and the seven hypotheses were tested.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter comprises of the summary, conclusion, implications to nursing practice, nursing education, nursing administration, nursing research and recommendations for further study.

SUMMARY OF THE STUDY

True experimental pre test- post -test control group design was adopted in this study to evaluate the effectiveness of snake and ladder game on level of knowledge and level of knowledge on practice among school children at selected corporation schools, Coimbatore. The study was conducted at Rathinapuri and Sidhapudur corporation schools, Coimbatore. The sample size was 120 and was selected by disproportionate stratified random sampling technique. A demographic Proforma, self administered Structured questionnaire and self administered check list was used to collect data based on the study objectives. The collected data were analyzed using descriptive and inferential statistics. To test the hypotheses, paired "t" test, independent "t" test, Karl Pearson method and chi- square were used.

FINDINGS OF THE STUDY

The major findings of the study was summarized as below

- In experimental group 25 (42%), control group 36 (60%) the highest samples were in the age group of 10 years.
- The male 31(52%), 36 (60%) and female 29 (48%), 24 (40%) samples were more or less equally distributed in experimental and control groups respectively.
- Most 47 (78%) of the samples were Hindus in both the groups.

- Highest percentage 24 (40%), 17 (28.33%) of the children's father had primary education in experimental and control groups respectively.
- Around one third 22(37%), 18 (30%) of the children's mother had primary education in experimental and control groups respectively.
- Highest percentages 40 (66%), 26 (43%) of children's father were coolie workers in experimental and control groups respectively.
- Highest percentage 22 (37%), 24 (40%) of the children's mother were home maker and 14(23%), 21(35%) were coolie workers experimental and control groups respectively.
- In experimental group highest percentage 25 (42%) of the sample's family monthly income was ≤ Rs. 5,000/-. In control group highest percentage 27(45%) of the sample's family income was between Rs.5,001/- to Rs. 10,000/.
- Highest percentage 40 (67%), 35 (58.33%) of the children's family were belongs to nuclear family in experimental and control groups respectively.
- More or less similar percentage 36(60%), 35 (58%) of the children's family had 2 children in experimental and control groups respectively.
- Highest percentage 39 (65%), 34 (57%) of the sample's family were living in pucca house in experimental and control groups respectively.
- Highest percentage 50 (83%), 42 (70%) of the sample's family were belongs to non- vegetarian in experimental and control groups respectively.
- Highest percentage 39(65%), 51(85%) of the samples had drinking water facility from outside the house.
- Nearly one third 22 (37%), 21 (35%) of the samples were using public toilet in experimental and control groups respectively.
- Almost all the samples 57(95%), 38 (63%) were using corporation dust bin for disposal of household waste in experimental and control groups respectively.
- Nearly one third 20 (33.33%), 21 (35%) of the samples were receiving information equally from parents and teachers in experimental and control groups respectively.
- Majority 42 (70%), 37(62%) of the samples had no previous exposure to worm infestation in both the groups.

- In experimental group highest percentage 37(62%) of the children had adequate knowledge in post test whereas in pre test most 41 (68%) of the children had inadequate knowledge regarding prevention of worm infestations.
- In experimental group highest percentage 51(85%) of the children had adequate knowledge on practice in post test whereas in pre test most 56(93%) of the children had moderately adequate knowledge on practice regarding prevention of worm infestations. In control group most of the children had moderately adequate knowledge on practice regarding prevention of worm infestations in pre test and post test.
- In experimental group the mean difference between the pre test and post test regarding prevention of worm infestations was 10.97 and in control group the mean difference between the pre test and post test regarding prevention of worm infestations was 0.3.
- The mean difference between pre test and post test level of knowledge on practice regarding prevention of worm infestations was 5.02 and 0.4 in experimental and control group respectively.
- The calculated paired 't' test value of knowledge regarding prevention of worm infestation 19.84 was greater than the table value 2.39 at $p \leq 0.01$. It reveals that snake and ladder game on worm infestations was effective in gaining knowledge among samples.
- The calculated paired' test value of knowledge on practice regarding worm infestation 20.46 was greater than the table value 2.39 at $p \leq 0.01$. It reveals that snake and ladder game on worm infestations was effective in gaining knowledge on practice among samples.
- The calculated independent 't' test value of knowledge regarding prevention of worm infestation 16.51 was greater than the table value 2.36 at $p \leq 0.01$,Which shows that there is a significant difference between post test level of knowledge regarding prevention of worm infestation between experimental and control group.

- The calculated independent 't' test value of knowledge regarding prevention of worm infestation 14.38 was greater than the table value 2.36 at $p \leq 0.01$. It shows that there is significant difference between post test level of knowledge on practice regarding prevention of worm infestation between experimental and control group.
- The calculated Karl Pearson 'r' value of knowledge and knowledge on practice regarding prevention of worm infestation (r=0.21) showed positive correlation.
- Among the experimental group in post test with regard to level of knowledge regarding prevention of worm infestation there was significant association found between level of knowledge and occupational status of father (χ^2=9.78) and rejected for other demographic variables of the children.
- Among control group, in pre and post test there was significant association found between level of knowledge and religion (χ^2=6.08, χ^2=11.77 respectively), in post test there was significant association found between level of knowledge and occupational status of mother (χ^2= 13.36), type of drinking water (χ^2= 4.07) except for the other demographic variables. .
- Among experimental group, in pre test there was significant association found between level of knowledge on practice and occupational status of father (χ^2 =10.85), total number of children in the family (χ^2=10.78) and previous exposure to worm infestation (χ^2=4.12) except for the other demographic variables.
- Among control group, in pre and post test there was significant association found between level of knowledge on practice and type of family (χ^2 =9.62, χ^2=12.85 respectively). In pre test there was significant association found between level of knowledge on practice and sex (χ^2=6.96), method of disposal of household waste (χ^2= 20.09) except for the other demographic variables.

CONCLUSION

The study was done to evaluate the effectiveness of snake and ladder game on Knowledge and knowledge on practice regarding prevention of worm infestations among primary school children at selected corporation school, Coimbatore. Among experimental group, in pre test majority of the samples had inadequate knowledge whereas in post test most of them had adequate knowledge regarding prevention of worm infestations. Among experimental group, in pre test majority of the samples had moderately adequate knowledge on practice whereas in post test almost all of them had adequate knowledge on practice regarding prevention of worm infestations. The result of the study revealed that, snake and ladder game was effective in improving the level of Knowledge and knowledge on practice regarding prevention of worm infestations among primary school children. Among the experimental group, there was significant association found between level of knowledge and occupational status of father. Among control group, there was significant association found between level of knowledge and religion, occupational status of mother and source of drinking water. Among experimental group there was significant association found between level of knowledge on practice and occupational status of father, total number of children in the family and previous exposure to worm infestation. Among control group, there was significant association found between level of knowledge on practice and type of family, sex and method of disposal of household waste except for the other demographic variables of children.

IMPLICATIONS

The findings of the study have implications in different aspects of nursing profession that is nursing practice, nursing education, nursing administration and nursing research.

Nursing Practice

- ✓ Nurses play a significant role in prevention of worm infestations and helping the individual to stay well, overcome and restore normal function.
- ✓ Snake and ladder game can be taught to children to improve the psychological well being.

- ✓ Health promotion is a vital function of the nurse and nurse can use video assisted teaching programme about worm infestations on three levels of prevention.
- ✓ Nurses working in the occupational health department and community health department should be given in service education to update and improve their knowledge regarding prevention of worm infestations.
- ✓ The Snake and ladder game can be utilized by the nurses to educate the caretakers in various settings.

Nursing Education

- ✓ This study will enhance the nursing students to acquire knowledge about Snake and ladder game and its importance in improving level of knowledge and knowledge on practice regarding prevention of worm infestations among children.
- ✓ Student nurses can be trained in practicing Snake and ladder game, so that they can teach Snake and ladder game and inculcate it in nursing care activities.
- ✓ Play therapies could be emphasized in nursing curriculum.
- ✓ The student nurses can also practice Snake and ladder game to enhance their own psychological wellbeing.
- ✓ Nursing curriculum needs to be updated to identify the aspects of nursing care, role and responsibilities of nurses in prevention of worm infestations and play therapy.
- ✓ Nurse educators should create awareness regarding prevention of worm infestations and new techniques available to improve the level of knowledge and knowledge on practice and quality of life of children.

Nursing Administration

- ✓ Nurse administrators should be vigilant to organize various staff development programs to educate the nurses on importance of snake and ladder game as an adjunct to improve the knowledge regarding various preventive aspect of child care.
- ✓ Nurse administrator should motivate the nurses to implement snake and ladder game while caring the children.

Nursing Research

- ✓ This study can be a baseline for further studies to build upon and motivate the researchers to conduct further studies.
- ✓ The generalization of study can be made by further replication of the study.
- ✓ As Nursing profession focuses on evidence based practice, the nursing personnel should involve in research activities to come out with successful remedies to reduce the burden of various diseases.

RECOMMENTATIONS

- ✓ The study can be replicated on large sample to validate and generalize the findings.
- ✓ Similar study can be conducted in various settings like paediatric hospital and community area.
- ✓ Longitudinal study can be conducted regarding prevention of worm infestations.
- ✓ A comparative study could be conducted to evaluate the effectiveness of snake and ladder game with other play therapies.
- ✓ A comparative study could be conducted to evaluate the effectiveness of snake and ladder game between government and private schools.
- ✓ A descriptive study can be conducted to determine the knowledge and practice of health care professionals towards worm infestation.

- ✓ A comparative study could be conducted to evaluate the effectiveness of snake and ladder game between urban and rural area.

Summary

- ❖ This chapter dealt with summary, conclusion, and implications for nursing practice, nursing education, nursing administration, nursing research and recommendations.

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ANNEXURE –I

A) LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

From

Ms. SANTHANALAKSHMI.S

M.Sc. (N) Final Year,

Kongunadu College Of Nursing,

Coimbatore.

To

The commissioner,

The Coimbatore municipal corporation,

Coimbatore.

Respected Sir/Madam,

Sub: Letter seeking permission to conduct the study.

I, Ms. Santhanalakshmi.S final year M.Sc (Nursing) Student of Kongunadu College of Nursing is conducting research project in partial fulfilment of the Tamil Nadu Dr.M.G.R Medical University, Chennai, as a part of the requirement for the award of M.sc (Nursing) Degree.

TOPIC: "A STUDY TO EVALUATE THE EFFECTIVENESS OF SNAKE AND LADDER GAME ON KNOWLEDGE AND KNOWLEDGE ON PRACTICE REGARDING PREVENTION OF WORM INFESTATIONS AMONG PRIMARY SCHOOL CHILDREN AT SELECTED CORPORATION SCHOOLS, COIMBATORE."I request you to kindly do the needful.

Thanking you,

Yours faithfully

Ms. Santhanalakshmi.S

ANNEXURE –I

A) LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

From

Ms. SANTHANALAKSHMI.S

M.Sc. (N) Final Year,

Kongunadu College Of Nursing,

Coimbatore.

To

The Chief Educational Officer,

The Coimbatore municipal corporation,

Coimbatore.

Respected Sir/Madam,

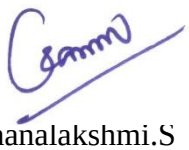
Sub: Letter seeking permission to conduct the study.

I, Ms. Santhanalakshmi.S final year M.Sc (Nursing) Student of Kongunadu College of Nursing is conducting research project in partial fulfilment of the Tamil Nadu Dr.M.G.R Medical University, Chennai, as a part of the requirement for the award of M.sc (Nursing) Degree.

TOPIC: "A STUDY TO EVALUATE THE EFFECTIVENESS OF SNAKE AND LADDER GAME ON KNOWLEDGE AND KNOWLEDGE ON PRACTICE REGARDING PREVENTION OF WORM INFESTATIONS AMONG PRIMARY SCHOOL CHILDREN AT SELECTED CORPORATION SCHOOLS, COIMBATORE."I request you to kindly do the needful.

Thanking you,

Yours faithfully



Ms. Santhanalakshmi.S

ANNEXURE –II

LETTER GRANDING PERMISSION TO CONDUCT THE STUDY

KONGUNADU COLLEGE OF NURSING

RUN BY KOVAI KONGUNATTU ARAKKATTALAI ★ AN ISO 9001:2008 CERTIFIED INSTITUTION

(RECOGNIZED BY THE GOVERNMENT OF TAMIL NADU AND APPROVED BY THE TAMIL NADU NURSES AND MIDWIVES COUNCIL, CHENNAI & THE INDIAN NURSING COUNCIL, NEW DELHI AND AFFILIATED TO THE TAMIL NADU Dr. M.G.R MEDICAL UNIVERSITY, CHENNAI)

TRUST : 64, 11th STREET, TATABAD, COIMBATORE – 641 012, TAMILNADU, PHONE : 91-422-4316000

COLLEGE : 336 TO 353, Dr. RAJENDRAPRASAD ROAD (100 FEET ROAD), TATABAD, COIMBATORE – 641 012, TAMILNADU

PHONE : 91-422-4213474 FAX: 91-422-4213485 E Mail : kongueducations@gmail.com

Rf :- Ref : 232 /KCN/BON.M/2015 Date : 30.11.2015

To

The Commissioner,
Coimbatore Corporation,
Coimbatore

Sir/ Madam,

This is to certify that Ms.S.Santhana Lakshmi doing her Final Year M.Sc(N) have to undertake a study as partial fulfillment of The Tamilnadu Dr.M.G.R Medical University. Her statement of the study is **"A STUDY TO EVALUATE THE EFFECTIVENESS OF SNAKE AND LADDER GAME ON KNOWLEDGE AND KNOWLEDGE OF PRACTICE REGARDING SELECTED WORM INFESTATIONS AMONG PRIMARY SCHOOL CHILDREN AGE BETWEEN 09–11 YEARS AT SELECTED GOVERNMENT SCHOOLS, COIMBATORE".**

Corporation Educational Officer Coimbatore.

School Names:

1. **Coimbatore Corporation School, Sidhapudur -44**
2. **Corporation Middle School, Pappanaicken Palayam – 37**
3. **Rathinapuri Corporation School, Rathinapuri – 27**
4. **Avaram Palayam Corporation School, Coimbatore – 6**

Kindly allow her to conduct her study in your institution during the months of January and March 2016. She will abide by the rules and regulations of your institution and will not disturb the routine work of your institution. Kindly do the needful.

Yours faithfully,

30/11/15

Principal.

KONGUNADU COLLEGE OF NURSING CBE-12

PROF. K. PAPPATHI, M Sc. (N)
PRINCIPAL
Kongunadu College of Nursing
Coimbatore-641 012

ANNEXURE –III

LETTER REQUESTING OPINION AND SUGGESTIONS OF EXPERT FOR CONTENT VALIDATION OF THE RESEARCH TOOL

From

SANTHANALAKSHMI.S,

Final year M .Sc (N),

Child Health Nursing Department,

Kongunadu College of Nursing,

Coimbatore, Tamil Nadu.

To

(Through proper channel)

Respected Madam,

Subject: Requesting opinion and suggestions of experts for establishing Content validity of the tool.

I, **Ms**. **SANTHANALAKSHMI.S** final year M.Sc.(Nursing) student of Kongunadu College of Nursing, Coimbatore, have selected the below mentioned statement of the problem for the research study to be submitted to The Tamil Nadu Dr.M.G.R.Medical University, Chennai as partial fulfilment for the award of Master of Science in Nursing.

Topic: "A STUDY TO EVALUATE THE EFFECTIVENESS OF SNAKE AND LADDER GAME ON KNOWLEDGE AND KNOWLEDGE ON PRACTICE REGARDING PREVENTION OF WORM INFESTATIONS AMONG PRIMARY SCHOOL CHILDREN AT SELECTED CORPORATION SCHOOLS, COIMBATORE."

I request you to kindly validate the tools & content developed for the study and give your expert opinion and suggestions for necessary modifications.

Thanking you

Date: Yours Sincerely,

Place: Coimbatore

Enclosed:

1. Certificate of validation
2. Criteria checklist for evaluation of tool
3. Tool for collection of data
4. Snake & ladder game intervention

(Ms.SANTHANALAKSHMI.S)

ANNEXURE-IV

LIST OF EXPERTS

1. **Dr. A.Subas Mohan Dass M.B.B.S. FCGB,**
   Specially Trained in Peadiatric and Neonatology,
   Sheela Hospital,
   Coimbatore.

2. **Mrs. Vijaya Lakshmi, M.Sc., (N), Ph.D (N),**
   HOD of Paediatrics,
   KG College of Nursing,
   Coimbatore.

3. **Mrs. Jeyabarathi, M.Sc., (N), Ph.D (N),**
   HOD of Paediatrics,
   PPG College of Nursing,
   Coimbatore.

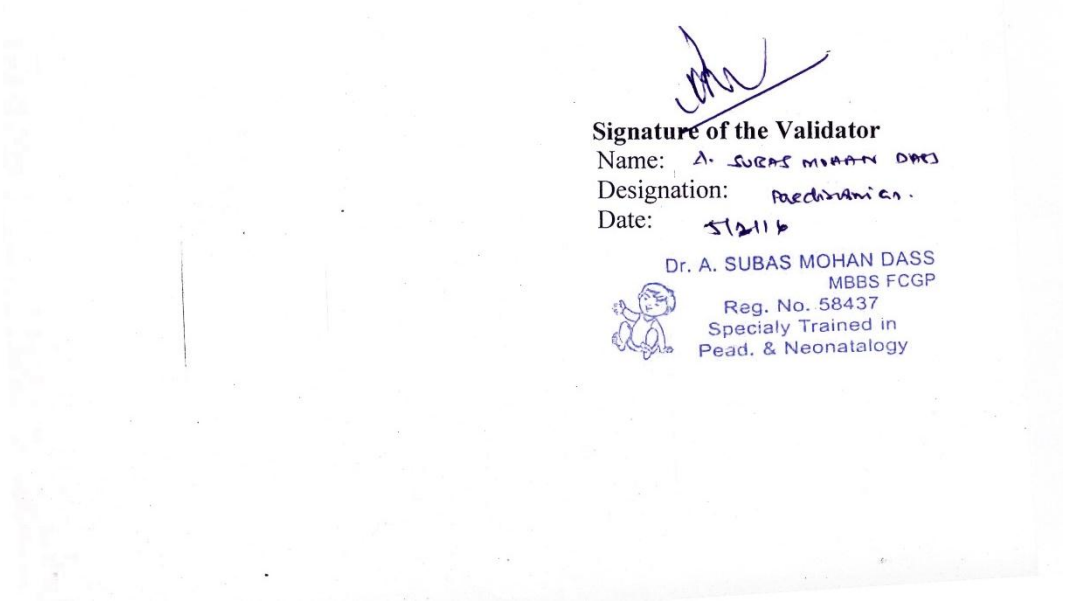
4. **Mrs. Lizzy Ravindren, M.Sc., (N), Ph.D (N),**
   Principal, Gem institute of Nursing education and Research
   HOD of Paediatrics,
   Coimbatore.

5. **Mrs. Beryl Juliet V.S, M.Sc., (N),**
   Associate professor,
   Sri Ramakrishna Institute of Paramedical Science,
   Coimbatore.

ANNEXURE-V

CERTIFICATE OF VALIDATION

This is to certify that the tool and content developed by **Ms.SANTHANALAKSHMI.S**, final year M.Sc. Nursing of Kongunadu College Of Nursing, Coimbatore (affiliated to The Tamil Nadu Dr. M.G.R. Medical University) is validated and can proceed with this tool and content for the main study entitled **"A STUDY TO EVALUATE THE EFFECTIVENESS OF SNAKE AND LADDER GAME ON KNOWLEDGE AND KNOWLEDGE ON PRACTICE REGARDING PREVENTION OF WORM INFESTATIONS AMONG PRIMARY SCHOOL CHILDREN AT SELECTED CORPORATION SCHOOLS, COIMBATORE."**



CERTIFICATE OF VALIDATION

This is to certify that the tool and content developed by **Ms.SANTHANALAKSHMI.S**, final year M.Sc. Nursing of Kongunadu College Of Nursing, Coimbatore (affiliated to The Tamil Nadu Dr. M.G.R. Medical University) is validated and can proceed with this tool and content for the main study entitled **"A STUDY TO EVALUATE THE EFFECTIVENESS OF SNAKE AND LADDER GAME ON KNOWLEDGE AND KNOWLEDGE ON PRACTICE REGARDING PREVENTION OF WORM INFESTATIONS AMONG PRIMARY SCHOOL CHILDREN AT SELECTED CORPORATION SCHOOLS, COIMBATORE."**

N. Vijayalakshmi

Signature of the Validator
Name: N. Vijayalakshmi
Designation: Professor
Date: 29/1/16

K. G. COLLEGE OF NURSING
K. G. HOSPITALS
ARTS COLLEGE RO

CERTIFICATE OF VALIDATION

This is to certify that the tool and content developed by **Ms.SANTHANALAKSHMI.S**, final year M.Sc. Nursing of Kongunadu College Of Nursing, Coimbatore (affiliated to The Tamil Nadu Dr. M.G.R. Medical University) is validated and can proceed with this tool and content for the main study entitled **"A STUDY TO EVALUATE THE EFFECTIVENESS OF SNAKE AND LADDER GAME ON KNOWLEDGE AND KNOWLEDGE ON PRACTICE REGARDING PREVENTION OF WORM INFESTATIONS AMONG PRIMARY SCHOOL CHILDREN AT SELECTED CORPORATION SCHOOLS, COIMBATORE."**

Signature of the Validator
Name: Dr. K. JEYABARATHI, M.Sc(N) Ph.D.
Designation: PROFESSOR.
Date: 22/01/16.

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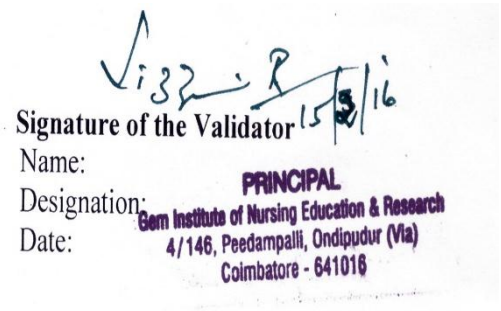

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Signature of the Validator
Name:
Designation: Associate Professor.
Date: 14/1/16

ANNEXURE-VI

SECTION-A

DEMOGRAPHIC VARIABLES OF PRIMARY SCHOOL CHILDREN

Kindly place a tick mark (✓)in the appropriate space provided against each item

Sample no

1) Age

1.1) 9 Years ( )

1.2) 10 Years ( )

1.3) 11 Years ( )

2) Sex

2.1) Female ( )

2.2) Male ( )

3) Religion

3.1) Hindu ( )

3.2) Christian ( )

3.3) Muslim ( )

3.4) others ( )

4) Educational Status of father		**5) Educational Status of mother**	
4.1) Illiterate	( )	5.1) Illiterate	( )
4.2) Primary education	( )	5.2) Primary education	( )
4.3) High School education	( )	5.3) High School education	( )
4.4) Higher secondary School education	( )	5.4) Higher secondary School education	( )
4.5) Graduate	( )	5.5) Graduate	( )

6) Occupational Status of father		7) Occupational Status of mother	
6.1) Private employee	( )	7.1) House wife	( )
6.2) Government employee	( )	7.2) Private employee	( )
6.3) Self employee	( )	7.3) Government employee	( )
6.4) Coolie	( )	7.4) Self employee	( )
6.5) Unemployed	( )	7.5) Coolie	( )

8) Family monthly income

8.1) ≤ Rs.5000/- ( )

8.2) Rs.5001/- to Rs.10, 000/- ( )

8.3) Rs.10, 001/- to Rs.15, 000/- ( )

8.4) Above Rs.15, 000/- ( )

9) Type of family

9.1) Nuclear family ( )

9.2) Joint family ( )

9.3) Extended family ( )

10) Total number of children in the family

10.1) One child ( )

10.2) Two child ( )

10.3) Three child and above ( )

11) Type of house

11.1) Pucca ( )

11.2) Kutcha ( )

12) Dietary pattern

12.1) Vegetarian ( )

12.2) Non- Vegetarian ( )

13) Source of drinking water (Public corporation water)

13.1) Inside the house ( )

13.2) Out side the house ( )

14) Type of defecation

14.1) Open field defecation ( )

14.2) House hold toilet ( )

14.3) Public toilet ( )

15) Method of disposal of household waste

15.1) Corporation dust bin ( )

15.2) Dumping ( )

15.3) Composting ( )

15.4) Burning ( )

16) Source of health information regarding worm infestation

16.1) Health care team members ( )

16.2) Media ( )

16.3) Parents ( )

16.4) Teachers ( )

17) Previous exposure to worm infestation

18.1) Yes ( )

18.2) No ( )

SECTION –B

SELF ADMINISTERED STRUCTURED QUESTIONNAIRE REGARDING KNOWLEDGE ON PREVENTION OF WORM INFESTATIONS

Please read carefully and Kindly place a tick mark (✓)in the appropriate space provided against each item

1) What is worm infestation?

1.1) Infestation caused by parasites ( )

1.2) Infestation caused by bacteria ( )

1.3) Infestation caused by virus ( )

1.4) Infestation caused by fungi ( )

2) What are the common types of worm infestation?

2.1) Round worm ( )

2.2) Hook worm ( )

2.3) Pin worm ( )

2.4) Whipworm ( )

2.5) Tape worm ( )

2.6) All the above ( )

3) In which developmental period is the most prevalence of worm infestation?

3.1) Infant (1 month -1year) ( )

3.2) Toddler (1-3years) ( )

3.3) Pre school children (3-5years) ( )

3.4) School going children (5-15 years) ( )

I) ROUND WORM INFESTATION

4) What is the major risk factor for round worm infestation?

4.1) Ingestion of contaminated fruits and vegetables ( )

4.2) Lack of sanitary facilities ( )

4.3) Open field defecation ( )

4.4) Drinking of contaminated water ( )

5) What are the signs and symptoms of round worm infestation?

5.1) Fever and vomiting ( )

5.2) Worms present in vomits and stools ( )

5.3) Breathing difficulty ( )

5.4) Both 5.1 and 5.2 ( )

6) What is the complication of round worm infestation?

6.1) Anemia ( )

6.2) Intestinal obstruction ( )

6.3) Dehydration ( )

6.4) Nutritional deficiencies ( )

7) What is the medical management measure of worm infestation?

7.1) Anti helminthic agents ( )

7.2) Antipyretics ( )

7.3) Analgesics ( )

7.4) Antiemetic ( )

8) What are the preventive measures available to control round worm infestation?

8.1) Use of chemical fertilizers ( )

8.2) Avoid open field defecation ( )

8.3) De worming twice in year ( )

8.4) both 8.2 and 8.3 ( )

II) HOOK WORM INFESTATION

9) What are the major risk factors of hook worm infestation?

9.1) Walking without Slippers ( )

9.2) Ingestion of contaminated vegetables like carrot and beet root ( )

9.3) Poor personal hygiene ( )

9.4) both 9.1 and 9.2 ( )

10) What are the signs and symptoms of hook worm infestation?

10.1) White patches over the face ( )

10.2) Loss of weight ( )

10.3) Craving for mud, ash, chalk pieces ( )

10.4) All the above ( )

11) What is the complication of hook worm infestation?

11.1) Appendicitis ( )

11.2) Urticaria ( )

11.3) Iron deficiency anemia ( )

11.4) Severe dehydration ( )

12) What are the preventive measures available to control hook worm infestation?

12.1) Wearing slippers ( )

12.2) Sanitary disposal of feces ( )

12.3) De worming twice in year ( )

12.4) All the above ( )

III) PIN WORM INFESTATION

13) What is the major risk factor of pin worm infestation?

13.1) Eating mud ( )

13.2) Poor hand washing ( )

13.3) Lack of sanitary facilities)

13.4) Ingestion of contaminated food ( )

14) What are the signs and symptoms of pin worm infestation?

14.1) Abdominal distension ( )

14.2) Extreme nocturnal itching in anal area ( )

14.3) Teeth grinding and abdominal pain ( )

14.4) both 14.2 and 14.3 ( )

15) What is the complication of pin worm infestation?

15.1) Appendicitis ( )

15.2) Severe diarrhea ( )

15.3) Malnutrition ( )

15.4) Jaundice ( )

16) How will you prevent the pin worm infestation?

16.1) cut short the nails ( )

16.2) Wearing tight under wear ( )

16.3) De worming twice in year ( )

16.4) All the above ( )

IV) WHIP WORM INFESTATION

17) What are the risk factors of whip worm infestation?

17.1) Playing outside in the dirt or soil ( )

17.2) Improper hand washing ( )

17.3) Unwashed vegetables and fertilized with human feces ( )

17.4) All the above ( )

18) What are the signs and symptoms of whip worm infestation?

18.1) Dysentery and abdominal pain ( )

18.2) Vomiting and fever ( )

18.3) Pruritis ( )

18.4) Abdominal distension ( )

19) What are the complications of whip worm infestation?

19.1) Malnutrition ( )

19.2) Anemia ( )

19.3) Physical growth retardation ( )

19.4) Brain fever ( )

20) What are the preventive measures available to control whip worm infestation?

20.1) Proper disposal of excreta ( )

20.2) Washing of raw vegetables under running water ( )

20.3) Safe drinking water ( )

20.4) All the above ( )

V) TAPE WORM INFESTATION

21) What are the major risk factors of tape worm infestation?

21.1) Improper hand washing ( )

21.2) under cooked pork and beef ( )

21.3) Eating food prepared by infected person ( )

21.4) both 21.2 and 21.3 ( )

22) What are the signs and symptoms of tape worm infestation?

22.1) Nausea ( )

22.2) Diarrhea or constipation ( )

22.3) Epilepsy and chronic headache ( )

22.4) abdominal pain ( )

23) What are the complications of tape worm infestation?

23.1) Peptic ulcer ( )

23.2) Neurocysticercosis ( )

23.3) Growth failure ( )

23.4) Both 23.2 and 23.3 ( )

24) How to prevent tape worm infestation?

24.1) Consumption of properly cooked meat ( )

24.2) avoid the fomites of the infected person ( )

24.3) De worming twice in year ( )

24.4) All the above ( )

SECTION –C

SELF ADMINISTERED CHECK LIST ON KNOWLEDGE ON PRACTICE REGARDING PREVENTION OF WORM INFESTATIONS

Please read carefully Kindly place a tick mark (✓)in the appropriate space provided against each item

S.NO	STATEMENT	YES	NO
1.	I always wash the hands before eating.		
2.	Before eating raw food items I always wash with running water.		
3.	I always wash the hands with soap and water after toileting		
4.	I always use boiled and cooled drinking water		
5.	I always Cut short the nails weekly once.		
6.	I never bite the nail.		
7.	I always wear tight under wear .		
8.	I always use inner garments and bed linens which are washed in hot water and dry it under direct sun light.		
9.	I never walking with bare foot.		
10.	I always use sanitary latrine.		
11.	I never eat mud, ash, pencil and chalk piece.		
12.	I never play in contaminated soil.		
13.	I always consume well cooked meat.		
14.	I always dispose the household waste properly.		
15.	I know that de worming measures for all the family members twice in year is necessary to prevent worm infestation.		

ANSWER KEY

S.NO	CORRECT RESPONSE	SCORE
1.	1.1	1
2.	2.6	1
3.	3.4	1
4.	4.3	1
5.	5.4	1
6.	6.2	1
7.	7.1	1
8.	8.4	1
9.	9.4	1
10.	10.4	1
11.	11.3	1
12.	12.4	1
13.	13.2	1
14.	14.4	1
15.	15.1	1
16.	16.4	1
17.	17.4	1
18.	18.1	1
19.	19.3	1
20.	20.4	1
21.	21.4	1
22.	22.3	1
23.	23.4	1
24.	24.4	1
	TOTAL SCORE	24

பகுதி -அ

ஆரம்ப பள்ளி மாணாக்கர்களின் சமூக மற்றும் குடும்பக் காரணிகள் கீழே கொடுக்கப்பட்டுள்ள வினாக்களை படித்துப்பார்த்து சரியான விடையை தேர்ந்தெடுத்து (✓) குறியிடவும்.

குறியீட்டு எண்

1. வயது

அ) 9 வயது ( )

ஆ) 10 வயது ( )

இ) 11 வயது ( )

2. பாலினம்

அ) பெண் ( )

ஆ) ஆண் ( )

3). மதம்

அ) இந்து ( )

ஆ) கிறிஸ்தவர் ( )

இ) முஸ்லிம் ( )

ஈ) மற்றவை ( )

4. தந்தையின் கல்வித்தகுதி			5. தாயின் கல்வித்தகுதி		
அ)	படிக்காதவர்	( )	அ)	படிக்காதவர்	( )
ஆ)	துவக்கப்பள்ளிக் கல்வி (5 ஆம் வகுப்பு வரை)	( )	ஆ)	துவக்கப்பள்ளிக் கல்வி(5 ஆம் வகுப்பு வரை)	( )
இ)	மேல்நிலைப்பள்ளிக் கல்வி (10 ஆம் வகுப்பு வரை)	( )	இ)	மேல்நிலைப்பள்ளிக் கல்வி(10 ஆம் வகுப்புவரை)	( )
ஈ)	உயர்நிலை ப்பள்ளிக் கல்வி (12 ஆம் வகுப்பு வரை)	( )	ஈ)	உயர்நிலை ப்பள்ளிக் கல்வி (12 ஆம் வகுப்பு வரை)	( )
உ)	பட்டதாரி	( )	உ)	பட்டதாரி	( )

6.தந்தையின்வேலைத்தகுதி		7. தாயின் வேலைத்தகுதி	
அ) அரசுவேலை	( )	அ)வீட்டில் இருப்பவர்	( )
ஆ) தனியார் வேலை	( )	ஆ) தனியார் வேலை	( )
இ) சுயதொழில்	( )	இ) அரசுவேலை	( )
ஈ) கூலி	( )	ஈ) சுயதொழில்	( )
உ) வேலையில்லாதவர்	( )	உ) கூலி	( )

8. குடும்பத்தின் மாதவருமானம்

அ) ≤ரூபாய் 5000 /- ( )

ஆ) ரூபாய் 5001 /- முதல் ரூபாய் 10,000 /- வரை ( )

இ) ரூபாய் 10,001 /- முதல் ரூபாய் 15,000 /- வரை ( )

ஈ) ரூபாய் 15,000/- க்கும் மேல் ( )

9. குடும்பத்தின் வகை

அ) தனிக்குடும்பம் ( )

ஆ) கூட்டுக்குடும்பம் ( )

இ) பெரியகுடும்பம் ( )

10. குடும்பத்திலுள்ள குழந்தைகளின் எண்ணிக்கை

அ) ஒரு குழந்தை ( )

ஆ) இரண்டு குழந்தை ( )

இ) மூன்று குழந்தை ( )

ஈ) மூன்று குழந்தைக்கு மேல் ( )

11. வசிக்கும் வீட்டின் வகை

அ) சிமெண்ட் வீடு ( )

ஆ) கூரை வீடு ( )

12. உணவு வகை

அ) காய்கறி உணவு வகைகளை உண்பவர்கள் ( )

ஆ)மாமிச உணவு வகைகளை உண்பவர்கள் ( )

13. குடிநீர் பெறும் இடம் (மாநகராட்சி குடிநீர் குழாய் வசதி)

அ) வீட்டிற்குள் உள்ளது ( )

ஆ) பொதுக்குழாய் நீர் ( )

14. மனித மலக்கழிவுகளை அகற்றும் முறை

அ) திறந்தவெளியில் மலம் கழித்தல் ( )

ஆ) வீட்டுக் கழிப்பறையை உபயோகித்தல் ( )

இ) பொதுக் கழிப்பறையை உபயோகித்தல் ( )

15. வீட்டுக் கழிவுகளை அகற்றும் முறை

அ) மாநகராட்சி குப்பைத்தொட்டி ( )

ஆ) குழித்தோண்டி புதைத்தல் ( )

இ) மக்கச்செய்தல் ( )

ஈ) எரித்தல் ( )

16. குடற்புழு பற்றிய விவரங்களை முன்னரே அறிந்தவரா?

அ) மருத்துவர் மற்றும் செவிலியர்கள் ( )

ஆ)தகவல் தொடர்பு சாதனங்கள் ( )

இ) அம்மா , அப்பா ( )

ஈ)ஆசிரியர்கள் ( )

17. குடும்பத்தில்உள்ளவர்களுக்கு குடர்புழுத்தொற்று நோய் உண்டா?

அ) ஆம் ( )

ஆ) இல்லை ( )

<u>பகுதி -ஆ</u>

ஆரம்பப்பள்ளி மாணவர்களிடம் குடற்புழுத் தொற்று பற்றிய அறிவுத்திறனைக் கண்டறிதல்.

கீழே கொடுக்கப்பட்டுள்ள வினாக்களை படித்துப்பார்த்து சரியான விடையை தேர்ந்தெடுத்து (✓) குறியிடவும்.

1. புழுத்தொற்றுஎன்றால் என்ன?

அ) ஒட்டுண்ணிகள் உடம்பிற்குள் ஊடுருவுதல் ( )

ஆ) பாக்டீரியாக்களின் தொற்று ( )

இ) வைரஸ்களினால் தொற்று ( )

ஈ) பூஞ்சைகளினால் தொற்று ( )

2. புழுத்தொற்றின்வகைகள் யாவை?

அ).உருளைப்புழு ( )

ஆ) கொக்கிப்புழு ( )

இ) ஊசிப்புழு ( )

ஈ) சவுக்கைப் புழு ( )

உ) நாடாப்புழு ( )

ஊ) மேற்கூறிய அனைத்தும் ( )

3) எந்தவயது பரிவினர் குடற்புழுத்தொற்றினால்அதிகம் பாதிக்கப்படுகிறார்கள்?

அ)1 மாதம் முதல்1 வருடம்வரை ( )

ஆ)1 வயது முதல்3 வயது வரை ( )

இ) 3 வயது முதல்5 வயது வரை ( )

ஈ) 5 வயது முதல்15 வயது வரை ( )

I) உருளைப்புழு தொற்று

4) உருளைப்புழுத்தொற்றிற்கான காரணிகள் யாவை?

அ) அசுத்தமான காய்கறிகள் மற்றும் பழங்களை உண்ணுதல் ( )

ஆ) கழிப்பறை வசதி குறைவு ( )

இ) திறந்த வெளியில் மலம் கழித்தல் ( )

ஈ)சுகாதாரமற்ற குடிநீரைக் குடித்தல் ( )

5. உருளைப்புழுத்தொற்றின் அறிகுறிகள் யாவை?

அ) காய்ச்சல் மற்றும் வாந்தி ( )

ஆ) உருளைப்புழு வாந்தி மற்றும் மலத்தில் காணப்படுதல் ( )

இ) மூச்சுத்திணறல் ( )

ஈ) அ மற்றும் ஆ ( )

6. உருளைப்புழுத்தொற்றினால் ஏற்படும் விளைவுகள் என்ன?

அ) இரத்தசோகை ( )

ஆ) குடலடைப்பு ( )

இ) நீர்ச்சத்து இழப்பு ( )

ஈ) ஊட்டச்சத்து குறைபாடு ( )

7. உருளைப்புழுத்தொற்றினைத் தடுக்கும் முறைகள் யாவை?

அ) இரசாயானப் பொருள்களைப் பயன்படுத்துதல் ( )

ஆ) திறந்தவெளியில் மலம் கழிப்பதைத் தவிர்த்தல் ( )

இ) குடற்புழுத்தொற்று நீக்க மருந்து உபயோகித்தல் ( )

ஈ) ஆ மற்றும் இ ( )

8) குடற்புழுத்தொற்றை குணப்படுத்துவதற்கு வழங்கப்படும் மாத்திரையின் பெயர் என்ன?

அ) குடற்புழுத்தொற்றிற்கு எதிரான மருந்துகள் ( )

ஆ) காய்ச்சலுக்கு எதிரான மருந்துகள் ( )

இ) வயிற்றுவலிக்கு எதிரான மருந்துகள் ( )

ஈ) மேற்கூறிய அனைத்தும் ( )

II) கொக்கிப்புழுத் தொற்று

9) கொக்கிப்புழுத் தொற்றிற்கான காரணிகள் யாவை?

அ) செருப்பு இல்லாமல் நடப்பது ( )

ஆ) கேரட் மற்றும் பீட்ருட் போன்ற காய்கறிகளை நன்கு கழுவாமல் சாப்பிடுதல் ( )

இ) சுயசுத்தம் இல்லாத காரணம் ( )

ஈ) அ மற்றும் ஆ ( )

10) கொக்கிப்புழுத்தொற்றின் அறிகுறிகள் யாவை?

அ) முகத்தில் தேமல் காணப்படுதல் ( )

ஆ) உடல் இளைத்தல் ( )

இ) மண்,சாம்பல் மற்றும் சிலேட்டு பென்சில் போன்றவற்றை சாப்பிடுதல் ( )

ஈ) மேற்கூறிய அனைத்தும் ( )

11) கொக்கிப்புழுத் தொற்றின் விளைவு என்ன?

அ) குடல்வால்வு அலர்ஜி ( )

ஆ) உடலில் அரிப்பு ஏற்படுதல் ( )

இ) இரும்புச் சத்து குறைபாட்டினால் ஏற்படும் இரத்தசோகை ( )

ஈ) கடுமையான நீர்ச்சத்து இழப்பு ( )

12). கொக்கிப்புழுத்தொற்றினை தடுக்கும் வழிமுறைகள் யாவை?

அ) செருப்பு அணிதல் ( )

ஆ) மனித மலக்கழிவுகளை சரியான முறையில் அகற்றுதல் ( )

இ) குடற்புழு நீக்க மருந்து வருடத்திற்கு இரு முறை எடுத்துக்கொள்ளுதல் ( )

ஈ) மேற்கூறிய அனைத்தும் ( )

III) ஊசிப்புழுத் தொற்று

13). ஊசிப்புழுத்தொற்றிற்கான காரணி எது?

அ) மண் திண்ணுதல் ( )

ஆ) சுத்தமில்லாத கைகளை வாயில் வைத்தல் ( )

இ) கழிப்பறை வசதி இல்லாமை ( )

ஈ) புழுவின் முட்டைகளால் அசுத்தமான வேகவைக்காத உணவுகளை உண்ணுதல் ( )

14). ஊசிப்புழுத்தொற்றின் அறிகுறிகள் யாவை?

அ) வயிறு உப்புதல் ( )

ஆ) இரவில் ஆசன வாயை சுற்றி அரித்தல் ( )

இ) பற்களை நெரித்ததல் மற்றும் வயிற்று வலி ( )

ஈ) ஆ மற்றும்இ ( )

15) ஊசிப்புழுத்தொற்றின் விளைவு என்ன?

அ) குடல்வால்வு அலர்ஜி ( )

ஆ) கடுமையான வயற்றுப்போக்கு ( )

இ) ஊட்டச்சத்துக்குறைபாடு ( )

ஈ) மஞ்சள் காமாலை ( )

16). ஊசிப்புழுத்தொற்றினை தடுக்கும் வழிமுறைகள் யாவை?

அ) விரல் நகங்களை வெட்டுதல் ( )

ஆ) இறுக்கமான உள்ளாடைகளை அணிதல் ( )

இ) குடற்புழு நீக்க மருந்து வருடத்திற்கு இரு முறை எடுத்துக்கொள்ளுதல் ( )

ஈ) மேற்கூறிய அனைத்தும் ( )

IV) சவுக்கைப்புழுத் தொற்று

17). சவுக்கைப் புழுத்தொற்றிற்கான காரணிகள் யாவை?

அ) அசுத்தமான இடத்தில் விளையாடுதல் ( )

ஆ) கைகளின் சுத்தம் பேணாமை ( )

இ) மனித கழிவுகளில் விளைந்த காய்கறிகள் மற்றும் காய்கறிகளை சுத்தமாக கழுவாமை ( )

ஈ) மேற்கூறிய அனைத்தும் ( )

18). சவுக்கைப் புழுத்தொற்றின் அறிகுறிகள் யாவை?

அ) சீதபேதி மற்றும் வயிற்றுவலி ( )

ஆ) வாந்தி மற்றும் காய்ச்சல் ( )

இ) உடலில் அரிப்பு ஏற்படுதல் ( )

ஈ) வயிறு உப்புதல் ( )

19.சவுக்கைப்புழுத்தொற்றின் விளைவுகள் யாவை?

அ) ஊட்டச்சத்து இல்லாமை ( )

ஆ) இரத்தசோகை ( )

இ) உடல்வளர்ச்சி இல்லாமை ( )

ஈ) மூளைக் காய்ச்சல் ( )

20. சவுக்கைப்புழுத்தொற்றினை தடுக்கும் வழிமுறைகள் யாவை?

அ) மனிதக் கழிவுகளை சரியான முறையில் அகற்றுதல் ( )

ஆ)ஓடும் தண்ணீரில் பச்சைக் காய்கறிகளை கழுவுதல் ( )

இ) கொதிக்கவைத்து ஆறவைத்த குடிநீரைப் பருகுதல் ( )

ஈ) மேற்கூறிய அனைத்தும் ( )

V. நாடாப்புழுத் தொற்று

21. நாடாப் புழுத்தொற்றிற்கான காரணிகள் யாவை?

அ) கைகளை சரிவரக் கழுவாமை ( )

ஆ) நன்கு வேகவைக்கப் படாத மாடு மற்றும் பன்றியின் இறைச்சி ( )

இ) நாடாப்புழுவினால் பாதிக்கப்பட்ட நபர் சமைத்தஉணவை உட்கொள்ளுதல் ( )

ஈ) ஆ மற்றும் இ ( )

22). நாடாப்புழுத்தொற்றின் அறிகுறிகள் யாவை?

அ) குமட்டல் மற்றும் ( )

ஆ) மலச்சிக்கல் அல்லது வயிற்றுபோக்கு ( )

இ) தலைவலி மற்றும் வலிப்புநோய் ( )

ஈ) வயிற்று வலி ( )

23). நாடாப்புழுத்தொற்றின் விளைவுகள் யாவை?

அ) வயிற்றுப்புண் ( )

ஆ) மூளையில்நீர்க்கட்டி உருவாதல் ( )

இ) வளர்ச்சியின்மை ( )

ஈ)ஆ மற்றும் இ ( )

24). நாடாப்புழுத்தொற்றினை தடுக்கும் வழிமுறைகள் யாவை?

அ) நன்கு வேகவைக்கப்பட்ட இறைச்சியை உண்ணுதல் ( )

ஆ) புழுத்தொற்றினால் பாதிக்கப்பட்ட நபரின் பொருட்களை உபயோகிப்பதை தவித்தல் ( )

இ) குடற்புழு நீக்க மருந்தை ஆறு மாதத்திற்கு ஒரு முறை எடுத்துக்கொள்ளுதல் ( )

ஈ) மேற்கூறிய அனைத்தும் ( )

பகுதி -இ

ஆரம்ப பள்ளி மாணவர்களின்,குடற்புழுத்தொற்றினை தடுப்பதற்கான அன்றாட நடவடிக்கைள் சார்ந்த அறிவுத்திறனைக் கண்டறிதல்.

கீழே கொடுக்கப்பட்டுள்ள வினாக்களை படித்துப்பார்த்து சரியான விடையைத் தேர்ந்தெடுத்து (✓) குறியிடவும்.

வ.எண்	குடற்புழுத்தொற்றினை தடுப்பதற்கான அன்றாட நடவடிக்கைள்	ஆம்	இல்லை
1.	நான் எப்பொழுதும் சாப்பிடுவதற்கு முன்பு கை கழுவுவேன்.		
2.	நான் பச்சைக் காய்கறிகளை வேகமாக ஓடும் தண்ணீரில் கழுவிய பின்பு சாப்பிடுவேன்.		
3.	நான் மலம் கழித்த பிறகு கைகளை சோப்பு போட்டு கழுவுவேன்.		
4.	நான் கொதிக்க வைத்து,ஆற வைத்த குடிநீரை மட்டுமே குடிப்பேன்.		
5.	நான் வாரம் ஒரு ஒருமுறை விரல்நகங்களை தவறாமல் வெட்டுவேன்.		
6.	நான் விரல் நகங்களை கடிக்க மாட்டேன்.		
7.	நான் இறுக்கமான உள்ளாடைகளை அணிவேன் .		
8.	நான் காலணிகள் அணியாமல் நடக்கமாட்டேன் .		
9.	நான் சிறுநீர் மற்றும் மலம் கழிக்க எப்பொழுதும் கழிப்பறையை உபயோகிப்பேன்.		
10.	நான் மண்,சாம்பல், மற்றும் சாக்பீஸ் போன்றவற்றை சாப்பிட மாட்டேன்.		
11.	வெந்நீரில் துவைத்து ,சூரிய ஒளியில் காய வைத்த உள்ளாடைகள் மற்றும் படுக்கை விரிப்புகளை மட்டுமே நான் உபயோகிப்பேன்.		
12.	நான் அசுத்தமான இடங்களில் விளையாட மாட்டேன்.		
13.	நான் நன்கு சுத்தம்செய்து,வேகவைக்கப்பட்ட இறைச்சியை மட்டுமே எப்பொழுதும் உண்ணுவேன்.		
14.	நான் சுற்றுபுறத்தை சுகாதாரமாக வைத்துக்கொள்ள வீட்டுக் கழிவுகளை முறையாக அகற்றுவேன்.		
15.	வீட்டிலுள்ள அனைவரும் ஆறு மாதத்திற்கு ஒரு முறை குடற்புழு நீக்க மருந்தை சரியான முறையில் எடுத்துக்கொள்ள வேண்டும் என்பதை நான் அறிவேன்.		

ANNEXURE-VII
SNAKE AND LADDER GAME

INTRODUCTION

Snakes and Ladders are based on an ancient Indian game that was designed to teach morality. The game was initially devised to teach Hindu principles of virtue, represented by the ladders, and evil, represented by snakes. The Snakes and Ladder game board has one hundred numbered squares that begin in the bottom left corner and toper up through 10 rows of 10 squares. The goal is to be the first player to reach square 100. On each row of ten squares are ladders which provide a free ride to levels higher up. Some of the ladders rise quite high, some are somewhat shorter. Also, on each set of 10 squares, apart from the bottom set, is a snake. If a player ends there turn on a snake's head they tumble down the snake's body to the lower levels.

Educational Value of Snake and Ladder game

- Snake and Ladder game develops children counting abilities, basic addition skills, basic sequence and pattern of numbers.
- The game helps children develop social language and math skills.
- Snake and Ladder game are the best way for children to bond with their friends and family.
- Snake and Ladder game are the platform for communication that will allow kids to understand and also helps in developing social skills in children.
- It also creates time for some fun.
- Snake and Ladder game are develops teamwork.
- Snake and Ladder game are a great mechanism to test an individual’s intelligence, strategy and skills.
- Snake and Ladder game are a stepping stone to acquiring the Problem solving skills.
- Snake and Ladder game are a budget entertainment.
- This game teaches to learn to accept winning or losing situation.

Rules of snake & ladder board game

The greatest importance of any games is the rules. Not only are these the How-to-play instructions, but they are the boundaries in which the game can be played. The basic rules of snakes & ladders are as follows:

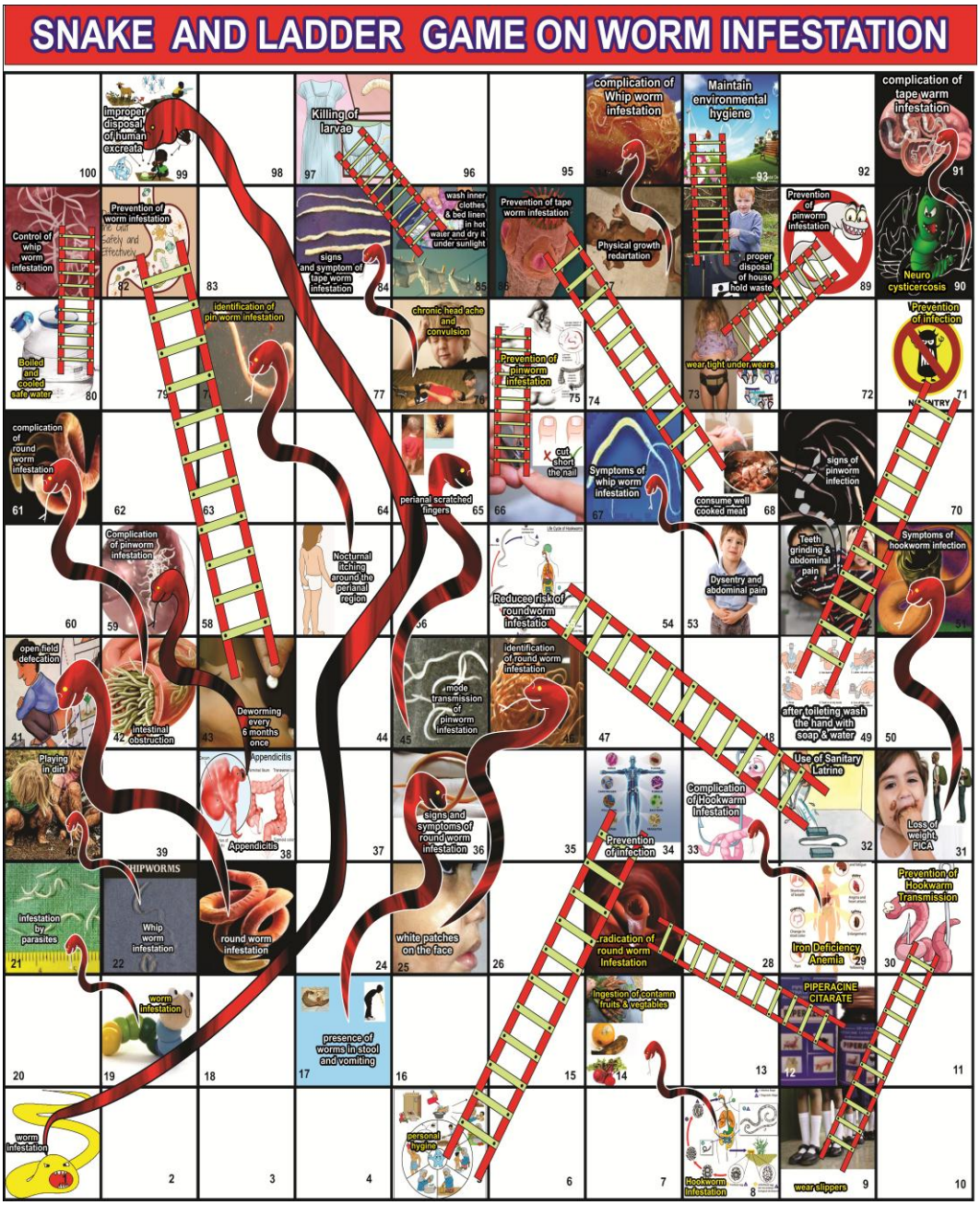
- Maximum number of players can be 6 to 8 players.
- Researcher throws the dice. The players are starts the game one by one and moving his/her counter according to the number shown on the dice.
- The player gets only one opportunity to throws a dice.
- If a counter stops at the head of the snake, the player must slide the counter down the snake until it gets to the tail.
- If a counter lands at the foot of a ladder, the player move their marker up and carries on from there.
- The player has to read the content either head or ladder and discussed with other players by the researcher.
- The first player to reach the square 100 is declared as the winner of the game.

Steps of snake & ladder flex game

1. The players are divided in 5 groups in 4^{th} standard and 5 groups in 5^{th}standard. Each group consist of 6 players.
2. Daily morning first group (4^{th} standard) and evening second group (5^{th} standard) of children were assembled in the play ground and rules and regulations of the game were explained to the group.
3. Each day two group will play with one hour duration and 3 drills will get per children.
4. Each player starts from square 1, marked as START, which is at the bottom left hand corner of the flex.
5. To researcher must shake the dice, the first player to get starts the game. Researcher then throws the dice again and moves forward the number of squares that is indicated on the dice. The player who is one the left side of the starter throws the dice and moves forward. Players continue to play in the same order until someone reaches square 100, which is the FINISH square.

6. If a player lands on a square at the bottom of the ladder, they must move their leg up the ladder. When he has reached the top of the ladder, they should read the positive information regarding worm infestation and discuss with their team members and continue playing from the square at the top of the ladder.
7. If a player lands on a square with a snake head on it, they should move their leg down the snake andread the negative information regarding worm infestation and discuss with their team members and continue playing from the square at the bottom of the snake.
8. The first player to reach the finish square is declared as the winner.

SNAKE & LADDER GAME ON WORM INFESTATION



DESCRIPTION ABOUT SNAKE AND LADDER GAME ON WORM INFESTATIONS

S.no	Information carries by snake head	Square number	Information carries by snake tail	Square number
1	Improper disposal of human excreta	99	worm infestation	1
2	Infestation by parasites	21	worm infestation	19
3	Ingestion of contaminated fruits and vegetables	14	Hook worm infestation	8
4.	Signs and symptoms of hook worm infestation	51	Loss of weight, Pica	31
5	Identification of hook worm infestation	46	White patches on the face	25
6	Complication of hook worm infestation	33	Iron deficiency anaemia	29
7	Open field defecation	41	Round worm infestation	23
8	Signs and symptoms of worm infestation	36	Presence of worms in stool and vomiting	17
9	Complication of round worm infestation	61	Intestinal obstruction	42
10	Playing in dirt	40	Whip worm infestation	22
11	Symptoms of whip worm infestation	67	Dysentery and abdominal pain	53
12	Complication of whip worm infestation	94	Physical growth retardation	87
13	Identification of pin worm infestation	78	Nocturnal itching around the peri anal region	57
14	Peri anal scratched fingers	65	Mode of transmission of pin worm infestation	45
15	Symptoms of pin worm infestation	69	Abdominal pain and teeth grinding	52
16	Complication of pin worm infestation	59	Appendicitis	38
17	Symptoms of tape worm infestation	84	Chronic headache and convulsion	76
18	Complication of tape worm infestation	91	Neuro cysticercosis	90

DESCRIPTION ABOUT SNAKE AND LADDER GAME ON WORM INFESTATIONS

S. No	Information carries by base of the ladder	Square number	Information carries by top of the ladder	Square number
1.	Personal hygiene	5	Prevention of infection	34
2.	Wear slippers	9	Prevention of hook worm infestation	0
3.	Proper disposal of house hold waste	12	Environmental hygiene	27
4.	Use of sanitary latrine	32	Reduce the risk of round worm infestation	5
5.	Deworming every six months once	43	Prevention of worm infestation	82
6.	After toileting and before eating wash the hands with soap and water	49	Prevention of infection	71
7.	Consume well cooked meat	68	Prevention of tape worm infestation	86
8.	Wear tight under wear	73	Prevention of pin worm infestation	89
9.	Cut short the nails	66	Prevention of pin worm infestation	75
10.	Wash inner cloth and bed linen in hot water and dry it under sunlight	85	Killing of larvae	97
11.	Boiled and cooled safe water	80	Control of whip worm infestation	81

குடற்புழுத் தொற்று பற்றிய பரமபத விளையாட்டு

முன்னுரை :

பரமபதம் இந்தியாவின் பழமையான விளையாட்டுகளில் ஒன்று.இது குழந்தைகளுக்கு நல்லோழுக்ககத்தைகற்றுக்கொடுக்க நம் முன்னோர்களால் ஏற்படுத்தப்பட்டது.

பரமபதம் விளையாட்டில் 100 கட்டங்கள்கீழ்புறத்தில்,இடதுபுறம் மூலையில் ஒன்றிலிருந்து,வலதுபுறமாக மேலேறத் தொடங்கி 10 வரிசை சென்று 100ல் முடிவடைகிறது. இதில் முதலில் 100 வது கட்டத்தை அடையும் நபர் வெற்றியாளர் என்று தீர்மானிக்கப்படுபவர்.விளையாடும் நபர் கட்டத்தில் உள்ள ஏணியின் அடிப்பகுதியை தொடும் போது ஏணியின் மேற்பகுதிக்குத் தடையின்றி செல்லலாம்.அதே வேளை பாம்பின் தலைப்பகுதியை தொட நேர்ந்தால் அவர் பாம்பின் வால்பகுதிக்கு கீழிறங்கி விளையாட்டைத் தொடர வேண்டும்.

பரமபத விளையாட்டின் நன்மைகள் :

- குழந்தைகளின் எண்களை எண்ணும் திறன்,எண்களின் வரிசை,கணிதத்திறனையும் மேம்படுத்துகிறது.
- பரமபதம் குடும்பம் மற்றும் நண்பர்களுக்கு இடையிலான உறவை மேம்படுத்துகிறது.
- குழந்தைகளின் சமூக பண்பு,மொழிபேசும்திறன் மற்றும் எளிமையாக புரிந்துகொள்ளும் திறனையும் மேம்படுத்துகிறது.
- குழந்தைகள் வேடிக்கையாக பொழுதைக் கழிக்க உதவுகிறது.
- குழந்தைகளுக்கு குழுவாக சேர்ந்து செயல்பட கற்றுத்தருகிறது.
- தனிநபர் புத்திக் கூர்மையையும், தனித்திறமையையும் அறிந்துகொள்ள உதவுகிறது.
- பரமபதம் பிரச்சினைகளை கையாளும் விதத்தை கற்றுத்தருகிறது.
- பரமபதம் அதிக செலவில்லாத விளையாட்டு.
- குழந்தைகள் நடுவில் வெற்றித் தோல்வியை சமமாக கருதும் மனப் பான்மையை மேலோங்க உதவுகிறது.

பரமபத விளையாட்டின் விதிமுறைகள்

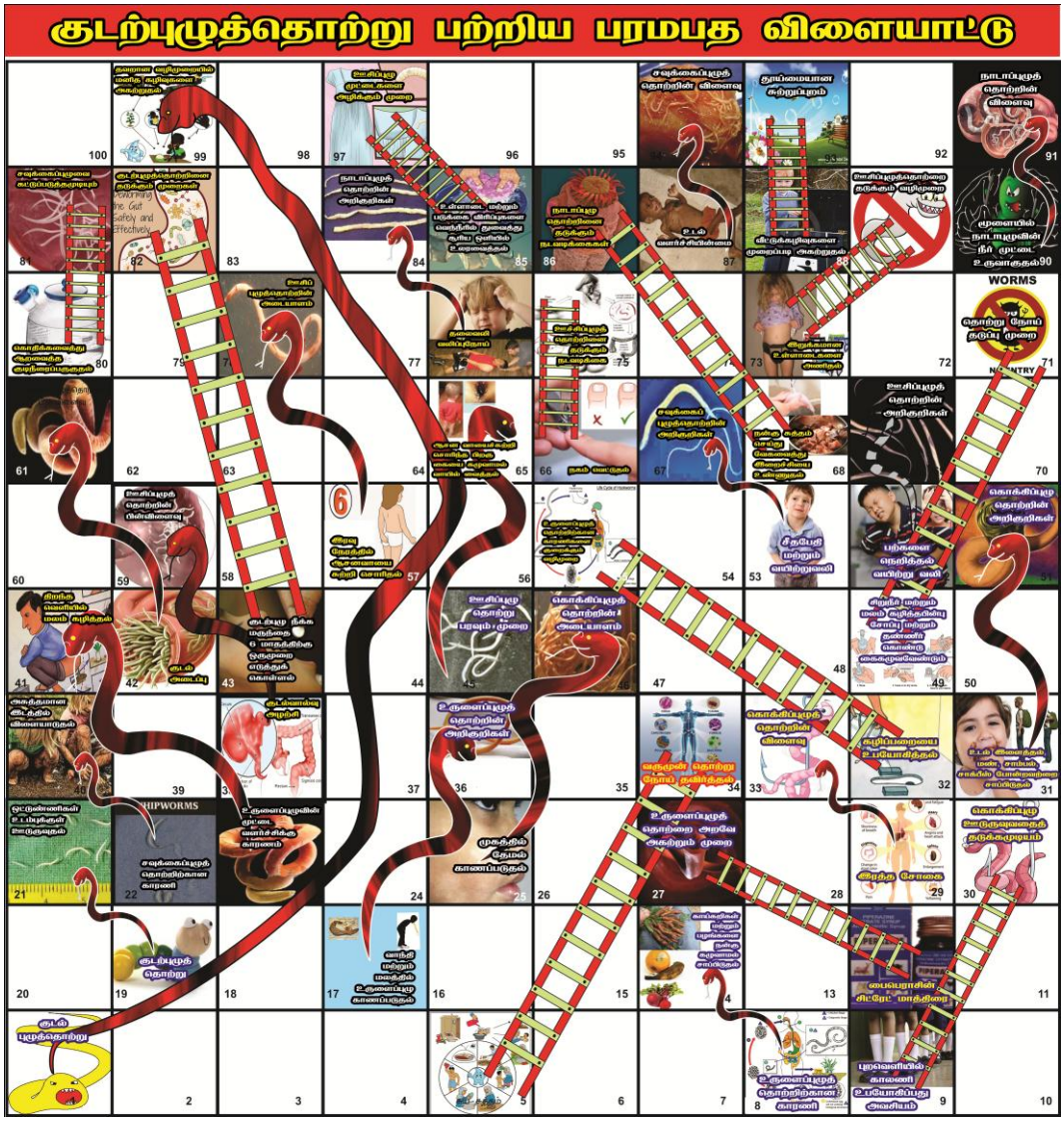
எந்தவொரு விளையாட்டிற்கும் விதிமுறைகள் அவசியம். விதிமுறைகள் விளையாட்டின் வரைமுறைகளைக் கற்றுத்தருகின்றது.

- பரமபத விளையாட்டை 6 பேர் விளையாடலாம்.
- ஒருவருக்கு ஒருமுறை மட்டுமே ஆராய்ச்சியாளர் பகடையை உருட்டுவார்.
- ஒருவர் பாம்பின் தலையிருக்கும் கட்டத்தை அடையும் பொழுது ,பாம்பின் வால் இருக்கும் கட்டத்திற்கு கீழிறங்குவர்.
- ஒருவர் ஏணியின் அடிப்பகுதி இருக்கும் கட்டத்தை அடையும் பொழுது அதன் மேல்பகுதி இருக்கும் கட்டத்திற்கு மேலேறுவர்.
- ஒருவர் பாம்பின் தலைப்பகுதி இருக்கும் கட்டத்தையோ அல்லது ஏணியின் அடிப்பகுதி இருக்கும் கட்டத்தையோ அடையும் பொழுது அதில் உள்ள குடற்புழுத் தொற்று பற்றிய செய்திகளை வாசித்து கலந்துரையாடிய பிறகு மற்றவர் விளையாட்டைத் தொடரலாம்.
- முதலில் யார் 100 வது கட்டத்தை அடையும் நபர் வெற்றியாளர் என்று தீர்மானிக்கப்படுவர்.

பரமபத விளையாட்டின் படி நிலைகள்

- நான்காம் வகுப்பிலிருந்து 6 பேர் கொண்ட 5 குழுக்களும்,ஐந்தாம் வகுப்பிலிருந்து 6 பேர் கொண்ட 5 குழுக்களும் தேர்ந்தெடுக்கப்பட்டன.
- தினமும் காலையில் நான்காம் வகுப்பிலிருந்தும்,மாலையில் ஐந்தாம் வகுப்பிலிருந்தும் ஒரு குழு விளையாட்டு மைதானத்திற்கு வரவழைக்கப்பட்டது.
- ஆராய்ச்சியாளர் குழந்தைகளுக்கு விளையாட்டின் விதிமுறைகள் எடுத்துரைக்கப்பட்ட பின் குடற்புழுத் தொற்று பற்றிய பரமபத விளையாட்டு கற்றுக்கொடுக்கப்பட்டது.
- இதே போன்று வாரத்தின் 5 நாட்களும் குழுக்கள் தங்கள் வரிசையின் படியே ஒருமணி நேரம் விளையாடி,மொத்தம் 3 முறை விளையாடும் வாய்ப்பு வழங்கப்பட்டது.

குடற்புழுத்தொற்று பற்றிய பரமபத விளையாட்டு



குடற்புழுத்தொற்று பற்றிய பரமபத விளையாட்டு

வ. எண்	பாம்பின் தலையில் உள்ள எதிர்மறையான செய்திகள்	கட்ட எண்	பாம்பின் வாலில் உள்ள செய்திகள்	கட்ட எண்
1	முறையற்ற வகையில் மனித கழிவுகளை அகற்றுதல்	99	குடற்புழுத்தொற்று	1
2	ஒட்டுண்ணிகள் உடம்புக்குள் ஊடுருவதல்	21	குடற்புழுத்தொற்று	19
3	அசுத்தமான காய்கறிகள் மற்றும் பழங்கள்	14	கொக்கிப்புழுத்தொற்று	8
4.	கொக்கிப்புழுத்தொற்றின் அறிகுறிகள்	51	உடல் இளைத்தல், மண், சாம்பல், சாக்பிஸ் போன்றவற்றை சாப்பிடுதல்	31
5	கொக்கிப்புழுத்தொற்றின் அடையாலங்கள்	46	முகத்தில் வெள்ளை காணப்படுதல்	25
6	கொக்கிப்புழுத்தொற்றின் பின்விளைவுகள்	33	இரும்பு சத்து குறைபாட்டினால் ஏற்படும் இரத்தசோகை	29
7	திறந்த வெளியில் மலம் கழித்தல்	41	உருளைப்புழுத்தொற்று	23
8	உருளைப்புழுத்தொற்றின் அறிகுறிகள்	36	வாந்தி மற்றும் மலத்தில் உருளைப்புழு காணப்படுதல்	17
9	உருளைப்புழுத்தொற்றின் பின்விளைவுகள்	61	குடலடைப்பு	42
10	அசுத்தமான இடத்தில் விளையாடுதல்	40	சவுக்கைப்புழுத்தொற்று	22
11	சவுக்கைப்புழுத்தொற்றின் அறிகுறிகள்	67	சீதபேதி மற்றும் வயற்றுவலி	53
12	சவுக்கைப்புழுத்தொற்றின் பின்விளைவுகள்	94	உடல் வளர்ச்சியின்மை	87
13	ஊசிப்புழுத்தொற்றின் அடையாலங்கள்	78	ஆசன வாயை சுற்றி இரவில் அரித்தல்	57
14	ஆசன வாயை சுற்றி சொரிந்த பிறகு கையை வாயில் வைத்தல்	65	ஊசிப்புழுத்தொற்று பரவும் முறை	45
15	ஊசிப்புழுத்தொற்றின் அறிகுறிகள்	69	வயிற்றுவலி மற்றும் பற்களை நெரித்தல்	52
16	ஊசிப்புழுத்தொற்றின் பின்விளைவுகள்	59	குடல் வால்வு அலர்ஜி	38
17	நாடாப்புழுத்தொற்றின் அறிகுறிகள்	84	தலைவலி மற்றும் வலிப்புநோய்	76
18	நாடாப்புழுத்தொற்றின் பின்விளைவுகள்	91	மூளையில் நீர்க்கட்டி உருவாதல்	90

குடற்புழுத்தொற்று பற்றிய பரமபத விளையாட்டு

வ. எண்	ஏணியின் அடிப்பகுதியில் உள்ள நேர்மறையான செய்திகள்	கட்ட எண்	ஏணியின் மேற்பகுதியில் உள்ள செய்திகள்	கட்ட எண்
1.	சுயசுத்தம்	5	வரும் முன் நோய் காப்போம்	34
2.	புற வெளியில் செருப்பு அணிதல்	9	கொக்கிப்புழுத்தொற்றினை தடுக்கும் வழிமுறைகள்	30
3.	முறையான வழிமுறையில் வீட்டுக் கழிவுகளை அகற்றுதல்	12	சுகாதாரமான சுற்றுப்புறம்	27
4.	கழிப்பறையை உபயோக்கிதல்	32	உருளைப்புழுத்தொற்றிற் காண காரணிகளை தவிர்க்கும் வழிமுறைகள்	55
5.	6 மாதத்திற்கு ஒரு முறை குடற்புழுத்தொற்றிற்கு எதிரான மருந்துக்களை எடுத்துக்கொள்ளுதல்	43	குடற்புழுத்தொற்றினை தடுக்கும் வழிமுறைகள்	82
6.	சாப்பிடுவதற்கு முன்பும் கழிப்பறையை உபயோகித்த பின்பும் கைகளை சோப்பு மற்றும் தண்ணீர் கொண்டு கழுவவேண்டும்	49	நோய்களை தடுக்கும் வழிமுறைகள்	71
7.	நன்கு சமைத்த இறைச்சியை உண்ணுதல்	68	நாடாப்புழுத்தொற்றினை தடுக்கும் வழிமுறைகள்	86
8.	இறுக்கமான உள்ளாடைகளை அணிதல்	73	ஊசிப்புழுத்தொற்றினை தடுக்கும் வழிமுறைகள்	89
9.	வாரம் ஒரு முறை விரல் நகங்களை வெட்டுதல்	66	ஊசிப்புழுத்தொற்றினை தடுக்கும் வழிமுறைகள்	75
10.	உள்ளாடைகள் மற்றும் படுக்கை விரிப்புகளை வெந்நீரில் துவைத்து சூரிய வெளியில் உலர வைக்க வேண்டும்	85	புழுக்களின் முட்டைகள் கொல்லப்படுகின்றன	97
11.	கொதிக்கவைத்து ஆற வைத்த குடிநீரைப் பருகுதல்	80	சவுக்கைப்புழுத்தொற்றினை தடுக்கும் வழிமுறைகள்	81

ANNEXURE VIII

CERTIFICATE FOR EDITING

TO WHOMSOEVER IT MAY CONCERN

Certify that the dissertation paper titled. **"A STUDY TO EVALUATE THE EFFECTIVENESS OF SNAKE AND LADDER GAME ON KNOWLEDGE AND KNOWLEDGE ON PRACTICE REGARDING PREVENTION OF WORM INFESTATIONS AMONG PRIMARY SCHOOL CHILDREN AT SELECTED CORPORATION SCHOOLS, COIMBATORE."** by Ms.Santhanalakshmi.S. It has been checked for accuracy and correctness of English language used in presenting the paper is lucid, unambiguous, free of grammatical or spelling errors and apt for the purpose.

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Coimbatore - 641 002.

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ANNEXURE IX
RESEARCHER TEACHING ON SNAKE AND LADDER GAME

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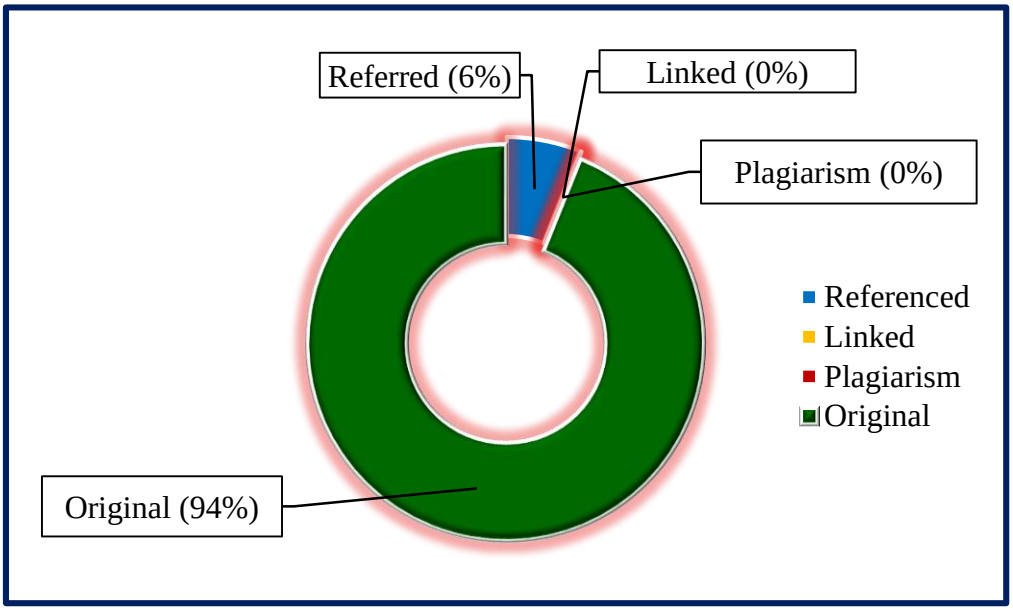

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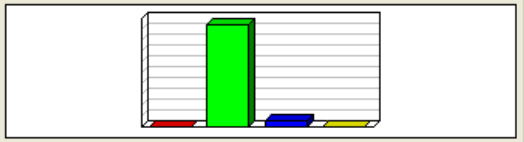

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